

SQ Sequence 431 AA;

Query Match 100.0%; Score 2288; DB 2; Length 431;
Best Local Similarity 100.0%; Pred. No. 2.6e-167;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTDKILILYFNKLYKKIKDNLDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
Db 1 SYTDKILILYFNKLYKKIKDNLDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60

Qy 61 GIYSKSEVNIAQNNDIYNGRYQNFSPFWVRIPKYNKVNLNNEYTIIDCIRNNSG 120
Db 61 GIYSKSEVNIAQNNDIYNGRYQNFSPFWVRIPKYNKVNLNNEYTIIDCIRNNSG 120

Qy 121 WKISLNTNKKIITLQDTAGNKKLVFNQYQNFISDYINQWIFVTITNNLGNRIYNG 180
Db 121 WKISLNTNKKIITLQDTAGNKKLVFNQYQNFISDYINQWIFVTITNNLGNRIYNG 180

Qy 181 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYKVPDTELKTEIETLYSDEPDP 240
Db 181 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYKVPDTELKTEIETLYSDEPDP 240

Qy 241 SILKDFMGNYLLYKRYLLNLLRTDKSITQNSNFMNINQORGVYQKPNFISNRLTYGV 300
Db 241 SILKDFMGNYLLYKRYLLNLLRTDKSITQNSNFMNINQORGVYQKPNFISNRLTYGV 300

Qy 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVDVDRVEYRLYADISIAKPEKIKLIRTSNS 360
Db 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVDVDRVEYRLYADISIAKPEKIKLIRTSNS 360

Qy 361 NSLGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 420
Db 361 NSLGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 420

Qy 421 FISKEHGWQEN 431
Db 421 FISKEHGWQEN 431

RESULT 2
AAB04103
ID AAB04103 standard; protein; 432 AA.
AC AAB04103;
XX
DT 11-APR-2001 (first entry)
DE Botulism toxin heavy chain C-terminal sequence (serotype F).
KW Botulism; toxin; neurotoxin; heavy chain; recombinant expression;
KW recombinant vector; antigen; immune response; vaccine; bacterium;
KW infection.
XX
OS Synthetic.
OS Clostridium botulinum.
XX
PN WO200067700-A2.
XX
PD 16-NOV-2000.
XX
PF 12-MAY-2000; 2000WO-US012890.
XX
PR 12-MAY-1999; 99US-0133865P.
PR 12-MAY-1999; 99US-0133866P.
PR 12-MAY-1999; 99US-0133867P.
PR 12-MAY-1999; 99US-0133868P.
PR 12-MAY-1999; 99US-0133869P.
PR 12-MAY-1999; 99US-0133870P.
PR 29-JUL-1999; 99US-0146192P.
XX
PA (USSA) US ARMY MEDICAL RES & MATERIAL COMMAND.
XX
PI Smith LA, Byrne MP, Middlebrook JL, Lapenotiere H;

XX WPI; 2001-016048/02.
DR N-PSDB; AAA54499.
XX New nucleic acids encoding the carboxy- or amino-terminal portions of the
PT heavy chain of botulinum neurotoxin of serotype A-G, useful as vaccine
PT against botulism.
XX
PS Disclosure; Fig 18b; 73pp; English.
XX
CC Botulism neurotoxins are translated as a single 150 kDa polypeptide chain
CC and then posttranslationally nicked, forming a dichain consisting of a
CC 100 kDa heavy chain and a 50 kDa light chain which remain linked by a
CC disulfide bond. Nucleic acids encoding the carboxy-terminal (HC) or amino
CC -terminal (HN) portion of the heavy chain of botulinum neurotoxin (BoNT)
CC can be used in recombinant expression vectors and expressed in
CC transformed cells to produce peptide antigens useful for eliciting an
CC immune response to give protective immunity against botulinum neurotoxin,
CC which causes botulism. The nucleic acids are expressible in a recombinant
CC organism such as Escherichia coli or Pichia pastoris. The use of
CC recombinant nucleic acids are advantageous since it eliminates the need
CC to culture large quantities of hazardous toxin-producing bacterium.
CC Production yield from the genetically engineered product is also high and
CC cost of production is lower. The nucleic acids can be derived from
CC Clostridium botulinum serotypes A-G
XX
SQ Sequence 432 AA;

Query Match 100.0%; Score 2288; DB 4; Length 432;
Best Local Similarity 100.0%; Pred. No. 2.6e-167;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTDKILILYFNKLYKKIKDNLDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
Db 2 SYTDKILILYFNKLYKKIKDNLDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 61

Qy 61 GIYSKSEVNIAQNNDIYNGRYQNFSPFWVRIPKYNKVNLNNEYTIIDCIRNNSG 120
Db 62 GIYSKSEVNIAQNNDIYNGRYQNFSPFWVRIPKYNKVNLNNEYTIIDCIRNNSG 121

Qy 121 WKISLNTNKKIITLQDTAGNKKLVFNQYQNFISDYINQWIFVTITNNLGNRIYNG 180
Db 122 WKISLNTNKKIITLQDTAGNKKLVFNQYQNFISDYINQWIFVTITNNLGNRIYNG 181

Qy 181 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYKVPDTELKTEIETLYSDEPDP 240
Db 182 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYKVPDTELKTEIETLYSDEPDP 241

Qy 241 SILKDFMGNYLLYKRYLLNLLRTDKSITQNSNFMNINQORGVYQKPNFISNRLTYGV 300
Db 242 SILKDFMGNYLLYKRYLLNLLRTDKSITQNSNFMNINQORGVYQKPNFISNRLTYGV 301

Qy 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVDVDRVEYRLYADISIAKPEKIKLIRTSNS 360
Db 302 EVIIRKNGSTDISNTDNFVRKNDLAYINVDVDRVEYRLYADISIAKPEKIKLIRTSNS 361

Qy 361 NSLGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 420
Db 362 NSLGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 421

Qy 421 FISKEHGWQEN 431
Db 422 FISKEHGWQEN 432

RESULT 3
AAB04096
ID AAB04096 standard; protein; 432 AA.
XX
AC AAB04096;
XX
DT 11-APR-2001 (first entry)
XX
PI

Botulinum toxin heavy chain C-terminal sequence (serotype F).

Botulinum toxin; neurotoxin; heavy chain; recombinant expression;
recombinant vector; antigen; immune response; vaccine; bacterium;
infection.

Synthetic.
Clostridium botulinum.

WO200067700-A2.
16-NOV-2000.

12-MAY-2000; 2000WO-US012890.

12-MAY-1999; 99US-0133865P.
12-MAY-1999; 99US-0133866P.
12-MAY-1999; 99US-0133867P.
12-MAY-1999; 99US-0133868P.
12-MAY-1999; 99US-0133869P.
12-MAY-1999; 99US-0133873P.
29-JUL-1999; 99US-0146192P.

(USSA) US ARMY MEDICAL RES & MATERIAL COMMAND.

Smith LA, Byrne MP, Middlebrook JL, Lapenotiere H;
WPI; 2001-016048/02.
N-PSDB; AAA54490.

New nucleic acids encoding the carboxy- or amino-terminal portions of the heavy chain of botulinum neurotoxin of serotype A-G, useful as vaccine against botulism.

Claim 3; Fig 9b; 73pp; English.

Botulinum neurotoxins are translated as a single 150 kDa polypeptide chain and then posttranslationally nicked, forming a dichain consisting of a 100 kDa heavy chain and a 50 kDa light chain which remain linked by a disulfide bond. Nucleic acids encoding the carboxy-terminal (HC) or amino-terminal (HN) portion of the heavy chain of botulinum neurotoxin (BoNT) can be used in recombinant expression vectors and expressed in transformed cells to produce peptide antigens useful for eliciting an immune response to give protective immunity against botulinum neurotoxin, which causes botulism. The nucleic acids are expressible in a recombinant organisms such as *Escherichia coli* or *Pichia pastoris*. The use of recombinant nucleic acids are advantageous since it eliminates the need to culture large quantities of hazardous toxin-producing bacterium. Production yield from the genetically engineered product is also high and cost of production is lower. The nucleic acids can be derived from Clostridium botulinum serotypes A-G

Sequence 432 AA;

Query Match 100.0%; Score 2288; DB 4; Length 432;
Best Local Similarity 100.0%; Pred. No. 2.6e-167; Indels 0; Gaps 0;
Matches 431; Conservative 0; Mismatches 0;

1 SYTNDKILLYFNKLYKKIKDMSILDYRNNKFDISGYSNISGVDVYIYSTNRQF 60
2 SYTNDKILLYFNKLYKKIKDMSILDYRNNKFDISGYSNISGVDVYIYSTNRQF 61

61 GYSSKPSVNTAQNNDIYNGRYQNFSPFWRIPKYNKVLNNEYTIIDCIRNNNSG 120
62 GYSSKPSVNTAQNNDIYNGRYQNFSPFWRIPKYNKVLNNEYTIIDCIRNNNSG 121

121 WKISLNNYKIWTLDQTAGNOKLVFNVTQMISIDYINKVFTVITNNRLGNSRYING 180
122 WKISLNNYKIWTLDQTAGNOKLVFNVTQMISIDYINKVFTVITNNRLGNSRYING 181

181 NLIDEKISNLGDIHVSNDILFKIVGCNDRYVIGIRYKVFDTGLKTEIETLYSDEPDP 240
182 NLIDEKISNLGDIHVSNDILFKIVGCNDRYVIGIRYKVFDTGLKTEIETLYSDEPDP 241

241 SILKDFWGNLYLNKRYLLNLRLTOKSITQNSFNFLNINQORGVYQKPNIFSNTLYTGV 300
242 SILKDFWGNLYLNKRYLLNLRLTOKSITQNSFNFLNINQORGVYQKPNIFSNTLYTGV 301
301 EVIIRKNGSTDISTNTDFVRKNDLAYINVVDRDVEYRLYADISIAKPEKIIKLIRTSNSN 360
302 EVIIRKNGSTDISTNTDFVRKNDLAYINVVDRDVEYRLYADISIAKPEKIIKLIRTSNSN 361
361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLGFHSNNLVASSWYNNIRKNTSSNGCFWS 420
362 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLGFHSNNLVASSWYNNIRKNTSSNGCFWS 421
421 FISKEHGWQEN 431
422 FISKEHGWQEN 432

RESULT 4
AAE07894
ID AAE07894 standard; protein; 645 AA.
XX AAE07894;
AC AAE07894;
XX 11-SEP-2003 (revised)
DT 01-NOV-2001 (first entry)
DT 01-NOV-2001 (first entry)
XX Modified clostridial heavy chain fragment #1.
DE
XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
KW diphtheria neurotoxin; botulinum neurotoxin type F; BoNT/F.
XX
XX Corynebacterium diphtheriae.
OS Clostridium botulinum.
OS Chimeric.
XX WO200158936-A2.
XX 16-AUG-2001.
PD
XX 04-DEC-2000; 2000WO-GB004644.
PP
XX 02-DEC-1999; 99GB-00028530.
PR
XX 07-APR-2000; 2000GB-00008658.
XX (MTCR-) MICROBIOLOGICAL RES AUTHORITY.
XX Shone CC, Sutton JM, Silman N;
XX WPI; 2001-514643/56.
XX
XX New non toxic polypeptide for delivery of a therapeutic agent for the treatment of a CNS disorder comprising a binding domain that translocates the therapeutic agent into the neuronal cells.
XX
XX Example 2; Page 44; 50pp; English.
XX
XX The invention relates to a non toxic polypeptide, for delivery of a therapeutic agent to a neuronal cell, which comprises a binding domain (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as Hc) that binds to the neuronal cell and a translocation domain (amino terminal half of HC, designated as HN), that translocates the therapeutic agent into the neuronal cell, where the translocation domain is not a HN domain of a clostridial neurotoxin and is not a fragment or derivative of a HN domain of a clostridial toxin. Polypeptides of the invention are useful for the treatment of a disease state associated with neuronal cells. The polypeptide constructs are useful for delivering therapeutic substances to neuronal cells. They are useful to treat disorders of the CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours and infection. They are also useful in gene therapy. The present sequence is modified clostridial heavy chain fragment. This sequence is constructed by fusing the binding domain of botulinum neurotoxin type F

CC (BoNT/F) with translocation domain of diphtheria neurotoxin. (Updated on
CC 11-SEP-2003 to standardise OS field)
XX
SQ Sequence 645 AA;

Query Match 100.0%; Score 2288; DB 4; Length 645;
Best Local Similarity 100.0%; Pred. No. 4.3e-167;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKPFIDISGYGSNISINGDVYIYSTNRNQF 60
Db 215 SYTNDKILILYFNKLYKKIKDINSILDMRYENKPFIDISGYGSNISINGDVYIYSTNRNQF 274
Qy 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVLNNNEYTIIDCIRNNSG 120
Db 275 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVLNNNEYTIIDCIRNNSG 334
Qy 121 WKISLNTYKLIWTLODTAGNNQKLVFNVTQMSISDYINKWIFVTITNNLGSRIYING 180
Db 335 WKISLNTYKLIWTLODTAGNNQKLVFNVTQMSISDYINKWIFVTITNNLGSRIYING 394
Qy 181 NLIDEKSIISGLDIHVSNDNLFKIVGCDNTRYGVIRYFKVPDTELKTEIETLYSDPDP 240
Db 395 NLIDEKSIISGLDIHVSNDNLFKIVGCDNTRYGVIRYFKVPDTELKTEIETLYSDPDP 454
Qy 241 SILKDFWGNLYLLKRYLLNLLRTDKSITQNSNPLNINQOQGVYQKPNIFSNTRLYTG 300
Db 455 SILKDFWGNLYLLKRYLLNLLRTDKSITQNSNPLNINQOQGVYQKPNIFSNTRLYTG 514
Qy 301 EVIIRKNGSTDISTNDNFVRKNDLAYINVVDREVEYRLYADISIAKPEKIKLIRTSNS 360
Db 515 EVIIRKNGSTDISTNDNFVRKNDLAYINVVDREVEYRLYADISIAKPEKIKLIRTSNS 574
Qy 361 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
Db 575 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 634
Qy 421 FISKEHGWQEN 431
Db 635 FISKEHGWQEN 645

RESULT 5
AAE35692 standard; protein; 645 AA.
XX AC AAE35692;
XX DT 23-OCT-2003 (revised)
XX DT 17-JUN-2003 (first entry)
XX DE Dipt HN domain-BoNT/F-Hc fusion construct.
XX KW Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
KW translocation domain; HN domain; Dipt; Hc; botulinum type F neurotoxin;
KW binding domain; BoNT/F.
XX OS Corynebacterium diphtheriae.
OS Clostridium botulinum.
OS Chimeric.
XX PN WO200296467-A2.
XX PD 05-DEC-2002.
XX XX 21-MAY-2002; 2002WO-GB002384.
XX PF 24-MAY-2001; 2001GB-00012687.
XX PR
XX PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Sutton JW, Shone CC;
PI WPI; 2003-167247/16.
XX Conjugate for modulating cell survival and cell growth, modulating
PT release of inflammatory mediator from cells, comprises injected bacterial
PT effector protein and a carrier that targets the protein to target cell.
XX Example 12; Page 57-60; 130pp; English.
PS The invention relates to a conjugate comprising an injected bacterial
CC effector protein and a carrier that targets the effector protein to a
CC target cell. Pharmaceutical composition of the invention is useful for a
CC treatment selected from promoting or inhibiting survival of cells;
CC preventing and reversing damage to cells; killing cells; promoting or
CC inhibiting the growth of cells; apoptosis, release of an inflammatory
CC mediator from cells, division of cells and treating intracellular
CC infection and regulating nitric oxide release from cells. The invention
CC is useful in the manufacture of a medicament for treating a neuronal
CC cell, for intracellular infection, for interfering with intracellular
CC trafficking, for modulating expression of cell-surface markers and for
CC inhibiting secretion from cells. The invention is also useful for
CC treating Prion disease, Alzheimer' disease and wide range of disorders
CC including muscle spasms such as blepharospasm, torticollis and
CC hypersecretion disorders such as chronic obstructive pulmonary disease
CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
CC domain (Dip-HN domain) and botulinum type F neurotoxin from Clostridium
CC botulinum. This sequence is used in the exemplification of the invention.
CC (Updated on 23-OCT-2003 to standardise OS field)
XX SQ Sequence 645 AA;

Query Match 100.0%; Score 2288; DB 6; Length 645;
Best Local Similarity 100.0%; Pred. No. 4.3e-167;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKPFIDISGYGSNISINGDVYIYSTNRNQF 60
Db 215 SYTNDKILILYFNKLYKKIKDINSILDMRYENKPFIDISGYGSNISINGDVYIYSTNRNQF 274
Qy 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVLNNNEYTIIDCIRNNSG 120
Db 275 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVLNNNEYTIIDCIRNNSG 334
Qy 121 WKISLNTYKLIWTLODTAGNNQKLVFNVTQMSISDYINKWIFVTITNNLGSRIYING 180
Db 335 WKISLNTYKLIWTLODTAGNNQKLVFNVTQMSISDYINKWIFVTITNNLGSRIYING 394
Qy 181 NLIDEKSIISGLDIHVSNDNLFKIVGCDNTRYGVIRYFKVPDTELKTEIETLYSDPDP 240
Db 395 NLIDEKSIISGLDIHVSNDNLFKIVGCDNTRYGVIRYFKVPDTELKTEIETLYSDPDP 454
Qy 241 SILKDFWGNLYLLKRYLLNLLRTDKSITQNSNPLNINQOQGVYQKPNIFSNTRLYTG 300
Db 455 SILKDFWGNLYLLKRYLLNLLRTDKSITQNSNPLNINQOQGVYQKPNIFSNTRLYTG 514
Qy 301 EVIIRKNGSTDISTNDNFVRKNDLAYINVVDREVEYRLYADISIAKPEKIKLIRTSNS 360
Db 515 EVIIRKNGSTDISTNDNFVRKNDLAYINVVDREVEYRLYADISIAKPEKIKLIRTSNS 574
Qy 361 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
Db 575 NSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 634
Qy 421 FISKEHGWQEN 431
Db 635 FISKEHGWQEN 645

RESULT 6
AAE35693

ID AAE35693 standard; protein; 657 AA.
 XX AC AAE35693;
 XX DT 17-JUN-2003 (first entry)
 XX DE BoNT/F-Hc-DipT HN domain-thrombin linker fusion construct.
 XX KW Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
 KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
 KW BoNT/F; translocation domain; HN domain; DipT; Hc; binding domain;
 KW botulinum type F neurotoxin.
 XX OS Corynebacterium diphtheriae.
 OS Clostridium botulinum.
 OS Unidentified.
 OS Chimeric.
 XX PN WO200296467-A2.
 XX PD 05-DEC-2002.
 XX PF 21-MAY-2002; 2002WO-GB002384.
 XX PR 24-MAY-2001; 2001GB-00012687.
 XX PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX PI Sutton JM, Shone CC;
 XX WPI; 2003-167247/16.
 DR Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.
 XX Example 12; Page 60-63; 130pp; English.
 PS The invention relates to a conjugate comprising an injected bacterial
 SS effector protein and a carrier that targets the effector protein to a
 CC target cell. Pharmaceutical composition of the invention is useful for a
 CC treatment selected from promoting or inhibiting survival of cells;
 CC preventing and reversing damage to cells; killing cells; promoting or
 CC inhibiting the growth of cells, apoptosis, release of an inflammatory
 CC mediator from cells, division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating Prion disease, Alzheimer' disease and wide range of disorders
 CC including muscle spasms such as blepharospasm, torticollis and
 CC hypersecretion disorders such as chronic obstructive pulmonary disease
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
 CC domain (DipT-HN domain), botulinum type F neurotoxin binding domain
 CC (BoNT/F-Hc) from Clostridium botulinum and thrombin linker peptide. This
 CC sequence is used in the exemplification of the invention
 XX SQ Sequence 657 AA;
 Query Match 100.0%; Score 2288; DB 6; Length 657;
 Best Local Similarity 100.0%; Pred. No. 4.5e-167;
 Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILLYFNKLYKKIKDSDMRYYNNKFDISGYSNISINGDVIYSTNRQF 60
 DB 227 SYTNDKILLYFNKLYKKIKDSDMRYYNNKFDISGYSNISINGDVIYSTNRQF 286
 QY 61 GYSSKPSVNTAQNNDIYNGRYQNFISFWVRIPKYNKVNANNEYTIIDCIRNNSG 120
 DB 121 WKISLNNYKIIWTLODTAGNNOKLVFNYYTQMISISDYINKWIFVTITNNRLGNSRIYING 180
 DB 347 WKISLNNYKIIWTLODTAGNNOKLVFNYYTQMISISDYINKWIFVTITNNRLGNSRIYING 406
 QY 181 NLIDEKSI NLGDIHVSDNLFKIVGCDNTRVYVIRYFKVFDTELKTEIETLYSDEPD 240
 DB 407 NLIDEKSI NLGDIHVSDNLFKIVGCDNTRVYVIRYFKVFDTELKTEIETLYSDEPD 466
 QY 241 SILKDFWGNLYLVNKKRYLLNLLRTDKSITONSFLNINQORGVYQKPNIFSNTRYLTGV 300
 DB 467 SILKDFWGNLYLVNKKRYLLNLLRTDKSITONSFLNINQORGVYQKPNIFSNTRYLTGV 526
 QY 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIIRTSNSN 360
 DB 527 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIIRTSNSN 586
 QY 361 NSLGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 420
 DB 587 NSLGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFWS 646
 QY 421 FISKEHGWQEN 431
 DB 647 FISKEHGWQEN 657
 RESULT 7
 AAE35694
 ID AAE35694 standard; protein; 657 AA.
 XX AC AAE35694;
 XX DT 17-JUN-2003 (first entry)
 XX DE BoNT/F-Hc-DipT HN domain-factor Xa linker fusion construct.
 XX KW Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
 KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
 KW BoNT/F; translocation domain; HN domain; DipT; Hc; binding domain;
 KW botulinum type F neurotoxin.
 XX OS Corynebacterium diphtheriae.
 OS Clostridium botulinum.
 OS Unidentified.
 OS Chimeric.
 XX PN WO200296467-A2.
 XX PD 05-DEC-2002.
 XX PF 21-MAY-2002; 2002WO-GB002384.
 XX PR 24-MAY-2001; 2001GB-00012687.
 XX PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX PI Sutton JM, Shone CC;
 XX WPI; 2003-167247/16.
 DR Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.
 XX Example 12; Page 63-65; 130pp; English.
 PS The invention relates to a conjugate comprising an injected bacterial
 SS effector protein and a carrier that targets the effector protein to a
 CC target cell. Pharmaceutical composition of the invention is useful for a
 CC treatment selected from promoting or inhibiting survival of cells;
 CC preventing and reversing damage to cells; killing cells; promoting or
 CC inhibiting the growth of cells, apoptosis, release of an inflammatory
 CC mediator from cells, division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating Prion disease, Alzheimer' disease and wide range of disorders
 CC including muscle spasms such as blepharospasm, torticollis and
 CC hypersecretion disorders such as chronic obstructive pulmonary disease
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
 CC domain (DipT-HN domain), botulinum type F neurotoxin binding domain
 CC (BoNT/F-Hc) from Clostridium botulinum and thrombin linker peptide. This
 CC sequence is used in the exemplification of the invention
 XX SQ Sequence 657 AA;
 Query Match 100.0%; Score 2288; DB 6; Length 657;
 Best Local Similarity 100.0%; Pred. No. 4.5e-167;
 Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILLYFNKLYKKIKDSDMRYYNNKFDISGYSNISINGDVIYSTNRQF 60
 DB 227 SYTNDKILLYFNKLYKKIKDSDMRYYNNKFDISGYSNISINGDVIYSTNRQF 286
 QY 61 GYSSKPSVNTAQNNDIYNGRYQNFISFWVRIPKYNKVNANNEYTIIDCIRNNSG 120

CC preventing and reversing damage to cells; killing cells; promoting or
 CC inhibiting the growth of cells; apoptosis, release of an inflammatory
 CC mediator from cells, division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating Prion disease, Alzheimer's disease and wide range of disorders
 CC including muscle spasms such as blepharospasm, torticollis and
 CC hypersecretion disorders such as chronic obstructive pulmonary disease
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising *Corynebacterium diphtheriae* diphtheria toxin translocation
 CC domain (DipT-HN domain), botulinum type F neurotoxin binding domain
 CC (BoNT/F-Hc) from *Clostridium botulinum* and factor Xa linker peptide. This
 CC sequence is used in the exemplification of the invention
 XX
 SQ Sequence 657 AA;

Query Match 100.0%; Score 2288; DB 6; Length 657;
 Best Local Similarity 100.0%; Pred. No. 4.5e-167;
 Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
 Db 227 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 286

Qy 61 GIYSSKSEVNIAQNNDIYNGRYQNFSPFWRIPIKYNKVLNNEYTIIDICIRNNSG 120
 Db 287 GIYSSKSEVNIAQNNDIYNGRYQNFSPFWRIPIKYNKVLNNEYTIIDICIRNNSG 346

Qy 121 WKISLNYNKIILWTQDTAGNKKLVFNVTQMISIDYINKWIFVTITNNLGSRIYING 180
 Db 347 WKISLNYNKIILWTQDTAGNKKLVFNVTQMISIDYINKWIFVTITNNLGSRIYING 406

Qy 181 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYFKVFDTELKGTETIETLYSDEPDP 240
 Db 407 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYFKVFDTELKGTETIETLYSDEPDP 466

Qy 241 SILKDFWGNVLLNKKRYLLNLLRTDKSITQNSFNINQORGYQKPNIFSNTRLTGV 300
 Db 467 SILKDFWGNVLLNKKRYLLNLLRTDKSITQNSFNINQORGYQKPNIFSNTRLTGV 526

Qy 301 EVIIRKNGSTDISTNDFVRKNDLAYINVVDREVLYADISIAKPEKIKLIRTSNSN 360
 Db 527 EVIIRKNGSTDISTNDFVRKNDLAYINVVDREVLYADISIAKPEKIKLIRTSNSN 586

Qy 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGCFWS 420
 Db 587 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGCFWS 646

Qy 421 FISKEHGWQEN 431
 Db 647 FISKEHGWQEN 657

RESULT 8
 ID AAE07893 standard; protein; 685 AA.
 XX
 AC AAE07893;
 XX
 DT 01-NOV-2001 (first entry)
 XX
 DE Modified clostridial heavy chain-superoxide dismutase conjugate #5.
 XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
 KW superoxide dismutase; SOD; botulinum neurotoxin type F; BoNT/F.
 XX
 OS Geobacillus stearothermophilus.
 OS Influenza virus.
 OS Clostridium botulinum.

OS Synthetic.
 OS Chimeric.
 XX
 FN WO200158936-A2.
 XX
 PD 16-AUG-2001.
 XX
 PF 04-DEC-2000; 2000WO-GB004644.
 XX
 PR 02-DEC-1999; 99GB-00028530.
 PR 07-APR-2000; 2000GB-00008658.
 XX
 PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX
 PI Shone CC, Sutton JM, Silman N;
 XX WPI; 2001-514643/56.
 XX

New non toxic polypeptide for delivery of a therapeutic agent for the treatment of a CNS disorder comprising a binding domain that translocates the therapeutic agent into the neuronal cells.
 Example 9; Page 43; 50pp; English.

The invention relates to a non toxic polypeptide, for delivery of a therapeutic agent to a neuronal cell, which comprises a binding domain (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as Hc) that binds to the neuronal cell and a translocation domain (amino terminal half of HC, designated as HN), that translocates the therapeutic agent into the neuronal cell, where the translocation domain is not a HN domain of a clostridial neurotoxin and is not a fragment or derivative of a HN domain of a clostridial toxin. Polypeptides of the invention are useful for the treatment of a disease state associated with neuronal cells. The polypeptide constructs are useful for delivering therapeutic substances to neuronal cells. They are useful to treat disorders of the CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours and infection. They are also useful in gene therapy. The present sequence is a modified clostridial heavy chain-superoxide dismutase conjugate. This conjugate comprises bacterial Mn-superoxide dismutase (MnSOD) from *Bacillus stearothermophilus*, linker that can be cleaved by factor Xa. Translocation peptide from influenza virus and a neuronal cell-specific binding domain from botulinum neurotoxin type F (BoNT/F)

SQ Sequence 685 AA;

Query Match 100.0%; Score 2288; DB 4; Length 685;
 Best Local Similarity 100.0%; Pred. No. 4.7e-167;
 Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
 Db 255 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 314

Qy 61 GIYSSKSEVNIAQNNDIYNGRYQNFSPFWRIPIKYNKVLNNEYTIIDICIRNNSG 120
 Db 315 GIYSSKSEVNIAQNNDIYNGRYQNFSPFWRIPIKYNKVLNNEYTIIDICIRNNSG 374

Qy 121 WKISLNYNKIILWTQDTAGNKKLVFNVTQMISIDYINKWIFVTITNNLGSRIYING 180
 Db 375 WKISLNYNKIILWTQDTAGNKKLVFNVTQMISIDYINKWIFVTITNNLGSRIYING 434

Qy 181 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYFKVFDTELKGTETIETLYSDEPDP 240
 Db 435 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYFKVFDTELKGTETIETLYSDEPDP 494

Qy 241 SILKDFWGNVLLNKKRYLLNLLRTDKSITQNSFNINQORGYQKPNIFSNTRLTGV 300
 Db 495 SILKDFWGNVLLNKKRYLLNLLRTDKSITQNSFNINQORGYQKPNIFSNTRLTGV 554

Qy 301 EVIIRKNGSTDISTNDFVRKNDLAYINVVDREVLYADISIAKPEKIKLIRTSNSN 360
 Db 555 EVIIRKNGSTDISTNDFVRKNDLAYINVVDREVLYADISIAKPEKIKLIRTSNSN 614

Qy 361 NSLQGIIVMDSIGNNCTNFQNNNGNIGLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
Db 615 NSLQGIIVMDSIGNNCTNFQNNNGNIGLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 674
Qy 421 FISKEHGWQEN 431
Db 675 FISKEHGWQEN 685

RESULT 9

AAE07890
ID AAE07890 standard; protein; 862 AA.

AC AAE07890;

DT 01-NOV-2001 (first entry)

DE Modified clostridial heavy chain-superoxide dismutase conjugate #2.

KW Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
KW superoxide dismutase; SOD; diphtheria neurotoxin;
KW botulinum neurotoxin type F; BoNT/F.

OS Geobacillus stearothermophilus.
OS Corynebacterium diphtheriae.
OS Clostridium botulinum.
OS Synthetic.
OS Chimeric.

XX WO200158936-A2.

XX 16-AUG-2001.

PD 04-DEC-2000; 2000WO-GB004644.

PF 02-DEC-1999; 99GB-00028530.

PR 07-APR-2000; 2000GB-00008658.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Shone CC, Sutton JM, Silman N;

XX WPI; 2001-514643/56.

XX New non toxic polypeptide for delivery of a therapeutic agent for the
PT treatment of a CNS disorder comprising a binding domain that translocates
PT the therapeutic agent into the neuronal cells.

PS Example 9; Page 40; 50pp; English.

CC The invention relates to a non toxic polypeptide, for delivery of a
CC therapeutic agent to a neuronal cell, which comprises a binding domain
CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
CC Hc) that binds to the neuronal cell and a translocation domain (amino
CC terminal half of HC, designated as HN), that translocates the therapeutic
CC agent into the neuronal cell, where the translocation domain is not a HN
CC domain of a clostridial neurotoxin and is not a fragment or derivative of
CC a HN domain of a clostridial toxin. Polypeptides of the invention are
CC useful for the treatment of a disease state associated with neuronal
CC cells. The polypeptide constructs are useful for delivering therapeutic
CC substances to neuronal cells. They are useful to treat disorders of the
CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
CC and infection. They are also useful in gene therapy. The present sequence
CC is modified clostridial heavy chain-superoxide dismutase conjugate. This
CC conjugate comprises bacterial Mn-superoxide dismutase (MnSOD), from
CC Bacillus stearothermophilus, linker that can be cleaved by factor Xa,
CC translocation domain from diphtheria neurotoxin and a neuronal cell-
CC specific binding domain from botulinum neurotoxin type F (BoNT/F)

XX Sequence 862 AA;

SQ Query Match 100.0%; Score 2288; DB 4; Length 862;

Best Local Similarity 100.0%; Pred. No. 6.3e-167;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENNNKFDIDISGYGSNISINGDVYIYSTNRNQF 60
Db 432 SYTNDKILILYFNKLYKKIKDINSILDMRYENNNKFDIDISGYGSNISINGDVYIYSTNRNQF 491
Qy 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKNLNNEYYTIIDCIRNNNSG 120
Db 492 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKNLNNEYYTIIDCIRNNNSG 551
Qy 121 WKISLNTYKLIITWLTQDTAGNNQKLVFNQYQNTOMISDSYINKWIFVTITNNRIGNSRIYING 180
Db 552 WKISLNTYKLIITWLTQDTAGNNQKLVFNQYQNTOMISDSYINKWIFVTITNNRIGNSRIYING 611
Qy 181 NLIDEKISINLGDIIHVSNDNLFKIVGNCNDRYVIRYFKVFDTELKTEIETLYSDEPDP 240
Db 612 NLIDEKISINLGDIIHVSNDNLFKIVGNCNDRYVIRYFKVFDTELKTEIETLYSDEPDP 671
Qy 241 SILKDFWGNLYLLNKRYYLLNLTDSKITSQNSFLNINQORGVYQKPNIFSNTRLYTGV 300
Db 672 SILKDFWGNLYLLNKRYYLLNLTDSKITSQNSFLNINQORGVYQKPNIFSNTRLYTGV 731
Qy 301 EVIIRKNGSTDISTNDNFVRKNDLAYINVDVDVEYRLYADISIAKPEKIIKLIRTSNSN 360
Db 732 EVIIRKNGSTDISTNDNFVRKNDLAYINVDVDVEYRLYADISIAKPEKIIKLIRTSNSN 791
Qy 361 NSLQGIIVMDSIGNNCTNFQNNNGNIGLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
Db 792 NSLQGIIVMDSIGNNCTNFQNNNGNIGLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 851
Qy 421 FISKEHGWQEN 431
Db 852 FISKEHGWQEN 862

RESULT 10

AAE07892
ID AAE07892 standard; protein; 887 AA.

XX AAE07892;

AC AAE07892;

XX 01-NOV-2001 (first entry)

XX Modified clostridial heavy chain-superoxide dismutase conjugate #4.
XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
KW superoxide dismutase; SOD; diphtheria neurotoxin; human;
KW botulinum neurotoxin type F; BoNT/F.

OS Homo sapiens.
OS Geobacillus stearothermophilus.
OS Corynebacterium diphtheriae.
OS Clostridium botulinum.
OS Synthetic.
OS Chimeric.

XX WO200158936-A2.

XX 16-AUG-2001.

XX 04-DEC-2000; 2000WO-GB004644.

XX 02-DEC-1999; 99GB-00028530.

PR 07-APR-2000; 2000GB-00008658.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Shone CC, Sutton JM, Silman N;

XX WPI; 2001-514643/56.

PT New non toxic polypeptide for delivery of a therapeutic agent for the
PT treatment of a CNS disorder comprising a binding domain that translocates
PT the therapeutic agent into the neuronal cells.

XX Example 9; Page 42; 50pp; English.

PS The invention relates to a non toxic polypeptide, for delivery of a
CC therapeutic agent to a neuronal cell, which comprises a binding domain
CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
CC HC) that binds to the neuronal cell and a translocation domain (amino
CC terminal half of HC, designated as HN), that translocates the therapeutic
CC agent into the neuronal cell, where the translocation domain is not a HN
CC domain of a clostridial neurotoxin and is not a fragment or derivative of
CC a HN domain of a clostridial toxin. Polypeptides of the invention are
CC useful for the treatment of a disease state associated with neuronal
CC cells. The polypeptide constructs are useful for delivering therapeutic
CC substances to neuronal cells. They are useful to treat disorders of the
CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumors
CC and infection. They are also useful in gene therapy. The present sequence
CC is modified clostridial heavy chain-superoxide dismutase conjugate. This
CC conjugate comprises a mitochondrial leader sequence from human Mn-
CC superoxide dismutase (MnSOD), MnSOD from Bacillus stearothermophilus,
CC linker that can be cleaved by thrombin, translocation domain from
CC diphtheria neurotoxin and a neuronal cell-specific binding domain from
CC botulinum neurotoxin type F (BoNT/F)

XX Sequence 887 AA;

Query Match 100.0%; Score 2288; DB 4; Length 887;
Best Local Similarity 100.0%; Pred. No. 6.5e-167;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTRNQF 60
DB 457 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTRNQF 516
QY 61 GIYSSKSEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPFNKVLNNYTIIDICIRNNNSG 120
DB 517 GIYSSKSEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPFNKVLNNYTIIDICIRNNNSG 576
QY 121 WKISLNYNKIIWTLODTAGNKKLVFNQYTMISISDYINKWIFVTITNRLGNSRIYNG 180
DB 577 WKISLNYNKIIWTLODTAGNKKLVFNQYTMISISDYINKWIFVTITNRLGNSRIYNG 636
QY 181 NLIDEKTSNIGDIHVSNDILFKVGNDRYVGRVFKVFDTELKTEIETLYSDSDPDP 240
DB 637 NLIDEKTSNIGDIHVSNDILFKVGNDRYVGRVFKVFDTELKTEIETLYSDSDPDP 696
QY 241 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNPLNINQQRGVYQKPNFNSNRLTYGV 300
DB 697 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNPLNINQQRGVYQKPNFNSNRLTYGV 756
QY 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVDVDVEYRLYADISIAKPEKIIKLRTSN 360
DB 757 EVIIRKNGSTDISNTDNFVRKNDLAYINVDVDVEYRLYADISIAKPEKIIKLRTSN 816
QY 361 NSLGGIIVYDSTIGNNCTWNNFNNNGNIGLLGFTSNLNVASSWYNNIRKNTSSNGCFWS 420
DB 817 NSLGGIIVYDSTIGNNCTWNNFNNNGNIGLLGFTSNLNVASSWYNNIRKNTSSNGCFWS 876
QY 421 FISKEHGWQEN 431
DB 877 FISKEHGWQEN 887

RESULT 11

AAE35713 standard; protein; 979 AA.

XX AAE35713;

AC AAE35713;

XX 17-JUN-2003 (first entry)

DT

XX

BoNT/F-Hc-DipT HN domain-factor Xa linker-YopT protein fusion construct.
Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
infection; prion disease; Alzheimer' disease; hypersecretion disorder;
muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
BoNT/F; translocation domain; HN domain; DipT; Hc; binding domain;
botulinum type F neurotoxin; targeted effector protein; YopT.

Corynebacterium diphtheriae.

Clostridium botulinum.

Yersinia pestis.

Unidentified.

Chimeric.

WC200296467-A2.

05-DEC-2002.

21-MAY-2002; 2002WO-GB002384.

24-MAY-2001; 2001GB-00012687.

(MICR-) MICROBIOLOGICAL RES AUTHORITY.

Sutton JM, Shone CC;

WPI; 2003-167247/16.

Conjugate for modulating cell survival and cell growth, modulating
release of inflammatory mediator from cells, comprises injected bacterial
effector protein and a carrier that targets the protein to target cell.
Example 12; Page 110-114; 130pp; English.

The invention relates to a conjugate comprising an injected bacterial
effector protein and a carrier that targets the effector protein to a
target cell. Pharmaceutical composition of the invention is useful for a
treatment selected from promoting or inhibiting survival of cells;
preventing and reversing damage to cells; killing cells; promoting or
inhibiting the growth of cells; apoptosis; release of an inflammatory
mediator from cells; division of cells and treating intracellular
infection and regulating nitric oxide release from cells. The invention
is useful in the manufacture of a medicament for treating a neuronal
cell, for intracellular infection, for interfering with intracellular
trafficking, for modulating expression of cell-surface markers and for
inhibiting secretion from cells. The invention is also useful for
treating Prion disease, Alzheimer' disease and wide range of disorders
including muscle spasms such as blepharospasm, torticollis and
hypersecretion disorders such as chronic obstructive pulmonary disease
(COPD), bronchitis and asthma. The present sequence is a fusion construct
comprising Corynebacterium diphtheriae diphtheria toxin translocation
domain (DipT-HN domain), botulinum type F neurotoxin binding domain
(BoNT/F-Hc) from Clostridium botulinum and factor Xa linker peptide and
Yersinia pestis targeted effector protein YopT. This sequence is used in
the exemplification of the invention

Sequence 979 AA;

Query Match 100.0%; Score 2288; DB 6; Length 979;
Best Local Similarity 100.0%; Pred. No. 7.4e-167;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTRNQF 60
DB 549 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTRNQF 608
QY 61 GIYSSKSEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPFNKVLNNYTIIDICIRNNNSG 120
DB 609 GIYSSKSEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPFNKVLNNYTIIDICIRNNNSG 668
QY 121 WKISLNYNKIIWTLODTAGNKKLVFNQYTMISISDYINKWIFVTITNRLGNSRIYNG 180

669 WKISLNTYKIIWTLQDTAGNKKLVFNVTOMISISDYINKWIFVTITNRLGNSRIYING 728
 181 NLIDEKSIISNLGDIHVSDNLFKIVGNDTRYGVIRYKVPDTELGKTEIETLYSDRDPD 240
 729 NLIDEKSIISNLGDIHVSDNLFKIVGNDTRYGVIRYKVPDTELGKTEIETLYSDRDPD 788
 241 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNLFNINQORGVYQKPNFISNTRLYTGV 300
 789 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNLFNINQORGVYQKPNFISNTRLYTGV 848
 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLRTSN 360
 849 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLRTSN 908
 361 NSLQGIIVMDSIGNCTMNFONNGNIGLLGFHNSNLFNINQORGVYQKPNFISNTRLYTGV 420
 909 NSLQGIIVMDSIGNCTMNFONNGNIGLLGFHNSNLFNINQORGVYQKPNFISNTRLYTGV 968
 421 FISKEHGWQEN 431
 969 FISKEHGWQEN 979

RESULT 12
 AA07901
 ID AA07901 standard; protein; 1032 AA.
 XX
 AC AA07901;
 XX
 DT
 XX
 XX
 DE C. botulinum C2 translocation domain with BoNT/F-binding domain #2.
 XX
 XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 KW tumour; infection; neurodegenerative disease; gene therapy;
 KW botulinum neurotoxin type F; BoNT/F.
 XX
 XX Clostridium botulinum.
 XX
 XX WO200158936-A2.
 XX
 PD 16-AUG-2001.
 XX
 XX 04-DEC-2000; 2000WO-GB004644.
 XX
 XX 02-DEC-1999; 99GB-00028530.
 PR
 PR 07-APR-2000; 2000GB-00008658.
 XX
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 PA
 XX Shone CC, Sutton JM, Silman N;
 PI
 XX WPI; 2001-514643/56.
 DR
 XX New non toxic polypeptide for delivery of a therapeutic agent for the
 XX treatment of a CNS disorder comprising a binding domain that translocates
 PT the therapeutic agent into the neuronal cells.
 XX
 XX Example 2; Page 48; 50pp; English.
 PS
 XX The invention relates to a non toxic polypeptide, for delivery of a
 XX therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 CC Hc) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial neurotoxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. The polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful to treat disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence

is C. botulinum C2 enterotoxin translocation domain with botulinum
 neurotoxin type F (BoNT/F) binding domain used in the exemplification of
 the invention

Sequence 1032 AA;
 Query Match 100.0%; Score 2288; DB 4; Length 1032;
 Best Local Similarity 100.0%; Pred. No. 7,9e-167;
 Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENNNKFDISGYGNSISINGDVYIYSTNRNQF 60
 DB 602 SYTNDKILILYFNKLYKKIKDINSILDMRYENNNKFDISGYGNSISINGDVYIYSTNRNQF 661
 QY 61 GIYSSKSEVNIAQNNDIYNGRYQNFISFWRIRPKYFNKNVNLNNEYTIIDCIRNNNSG 120
 DB 662 GIYSSKSEVNIAQNNDIYNGRYQNFISFWRIRPKYFNKNVNLNNEYTIIDCIRNNNSG 721
 QY 121 WKISLNTYKIIWTLQDTAGNKKLVFNVTOMISISDYINKWIFVTITNRLGNSRIYING 180
 DB 722 WKISLNTYKIIWTLQDTAGNKKLVFNVTOMISISDYINKWIFVTITNRLGNSRIYING 781
 QY 181 NLIDEKSIISNLGDIHVSDNLFKIVGNDTRYGVIRYKVPDTELGKTEIETLYSDRDPD 240
 DB 782 NLIDEKSIISNLGDIHVSDNLFKIVGNDTRYGVIRYKVPDTELGKTEIETLYSDRDPD 841
 QY 241 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNLFNINQORGVYQKPNFISNTRLYTGV 300
 DB 842 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNLFNINQORGVYQKPNFISNTRLYTGV 901
 QY 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLRTSN 360
 DB 902 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLRTSN 961
 QY 361 NSLQGIIVMDSIGNCTMNFONNGNIGLLGFHNSNLFNINQORGVYQKPNFISNTRLYTGV 420
 DB 962 NSLQGIIVMDSIGNCTMNFONNGNIGLLGFHNSNLFNINQORGVYQKPNFISNTRLYTGV 1021
 QY 421 FISKEHGWQEN 431
 DB 1022 FISKEHGWQEN 1032

RESULT 13
 AA93309
 ID AA93309 standard; protein; 1059 AA.
 XX
 AC AA93309;
 XX
 DT 04-SEP-2000 (first entry)
 XX
 DE A manganese superoxide dismutase (Mn-SOD) construct.
 XX
 XX Manganese superoxide dismutase; Mn-SOD; SOD; neuronal cell;
 KW neuronal cell targeting component; NCTC; neuronal disease;
 KW oxidative stress; ischemic stroke; trauma; Parkinson's disease;
 KW Huntington's disease; motor neurone disease;
 KW botulinum neurotoxin serotype F.
 XX
 OS Synthetic.
 OS Geobacillus stearothermophilus.
 OS Clostridium botulinum.
 XX
 PN WO200028041-A1.
 XX
 PD 18-MAY-2000.
 XX
 XX 05-NOV-1999; 99WO-GB003699.
 PF
 XX 05-NOV-1998; 98GB-00024282.
 PR
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 PA
 XX

PI Shone CC, Sutton JM, Hallis B, Silman N;
 XX WPI; 2000-376553/32.
 XX Novel composition, comprising superoxide dismutase linked by a cleavable
 PT linker to a neuronal cell targeting component useful for delivering
 PT superoxide dismutase to neuronal cells to treat ischemia.
 XX Disclosure; Page 48-51; 65pp; English.
 XX The present sequence represents a construct of the invention, comprising
 CC a manganese superoxide dismutase (Mn-SOD) polypeptide, a linker that can
 CC be cleaved by thrombin, and a heavy chain derived from botulinum
 CC neurotoxin serotype F. The specification describes a composition for
 CC delivery of SOD to neuronal cells. The composition comprises SOD linked,
 CC by a cleavable linker, to a neuronal cell targeting component (NCTC).
 CC This component has a domain that binds to a neuronal cell and a domain
 CC that translocates the SOD of the composition into the neuronal cell.
 CC After translocation, the linker is cleaved to release the SOD. The
 CC composition is useful for treating neuronal diseases caused or augmented
 CC by oxidative stress, such as ischemic stroke, trauma, Parkinson's
 CC disease, Huntington's disease and motor neurone diseases
 XX Sequence 1059 AA;
 Query Match 100.0%; Score 2288; DB 3; Length 1059;
 Best Local Similarity 100.0%; Pred. No. 8.2e-167;
 Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
 DB 629 SYTNDKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 688
 QY 61 GIYSSKSEVNIAQNNDIIYNGRYQNFISFWVRIPKYPFNKVLNNEYTTIDCIRNNSG 120
 DB 689 GIYSSKSEVNIAQNNDIIYNGRYQNFISFWVRIPKYPFNKVLNNEYTTIDCIRNNSG 748
 QY 121 WKISLNYNKIITWLTQDTAGNKKLVNTOMISDYINKWIFVTITNRLGNSRIYING 180
 DB 749 WKISLNYNKIITWLTQDTAGNKKLVNTOMISDYINKWIFVTITNRLGNSRIYING 808
 QY 181 NLIDEKSIISNLGDIHVSNDILFKIVGNCNDRYVIRYKPKVDTLKGTEIETLYSDPDP 240
 DB 809 NLIDEKSIISNLGDIHVSNDILFKIVGNCNDRYVIRYKPKVDTLKGTEIETLYSDPDP 868
 QY 241 SILKDFWGNLYLLYKRYLLNLLRTDKSITQNSNPLNINQORGVYQKPNIFSNTRLYTGV 300
 DB 869 SILKDFWGNLYLLYKRYLLNLLRTDKSITQNSNPLNINQORGVYQKPNIFSNTRLYTGV 928
 QY 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIKLIRTSNSN 360
 DB 929 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIKLIRTSNSN 988
 QY 361 NSLQGIIVWDSIGNNCTWNNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFS 420
 DB 989 NSLQGIIVWDSIGNNCTWNNFQNNNGNIGLLGFHSNNLVASSWYNNIRKNTSSNGCFS 1048
 QY 421 FISKEHGWQEN 431
 DB 1049 FISKEHGWQEN 1059
 RESULT 14
 AAY93312
 ID AAY93312 standard; protein; 1084 AA.
 XX AC AAY93312;
 XX AC AAY93312;
 DT 04-SEP-2000 (first entry)
 XX A manganese superoxide dismutase (Mn-SOD) construct.
 DE Manganese superoxide dismutase; Mn-SOD; SOD; neuronal cell;
 XX KW neuronal cell targeting component; NCTC; neuronal disease;
 KW oxidative stress; ischemic stroke; trauma; Parkinson's disease;
 KW Huntington's disease; motor neurone disease;
 KW botulinum neurotoxin serotype F.
 XX Synthetic.
 OS Homo sapiens.
 OS Geobacillus stearothermophilus.
 OS Clostridium botulinum.
 XX WO200028041-A1.
 PD 18-MAY-2000.
 XX 05-NOV-1999; 99WO-GB003699.
 XX 05-NOV-1998; 98GB-00024282.
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 PA Shone CC, Sutton JM, Hallis B, Silman N;
 PI WPI; 2000-376553/32.
 XX Novel composition, comprising superoxide dismutase linked by a cleavable
 PT linker to a neuronal cell targeting component useful for delivering
 PT superoxide dismutase to neuronal cells to treat ischemia.
 XX Disclosure; Page 57-60; 65pp; English.
 XX The present sequence represents a construct of the invention, comprising
 CC a mitochondrial leader sequence from human manganese superoxide dismutase
 CC (Mn-SOD), a Bacillus stearothermophilus Mn-SOD, a linker that can be
 CC cleaved by thrombin, and a heavy chain derived from botulinum neurotoxin
 CC serotype F. The specification describes a composition for delivery of SOD
 CC to neuronal cells. The composition comprises SOD linked, by a cleavable
 CC linker, to a neuronal cell targeting component (NCTC). This component has
 CC a domain that binds to a neuronal cell and a domain that translocates the
 CC SOD of the composition into the neuronal cell. After translocation, the
 CC linker is cleaved to release the SOD. The composition is useful for
 CC treating neuronal diseases caused or augmented by oxidative stress, such
 CC as ischemic stroke, trauma, Parkinson's disease, Huntington's disease and
 CC motor neurone diseases
 XX Sequence 1084 AA;
 Query Match 100.0%; Score 2288; DB 3; Length 1084;
 Best Local Similarity 100.0%; Pred. No. 8.4e-167;
 Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
 DB 654 SYTNDKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 713
 QY 61 GIYSSKSEVNIAQNNDIIYNGRYQNFISFWVRIPKYPFNKVLNNEYTTIDCIRNNSG 120
 DB 714 GIYSSKSEVNIAQNNDIIYNGRYQNFISFWVRIPKYPFNKVLNNEYTTIDCIRNNSG 773
 QY 121 WKISLNYNKIITWLTQDTAGNKKLVNTOMISDYINKWIFVTITNRLGNSRIYING 180
 DB 774 WKISLNYNKIITWLTQDTAGNKKLVNTOMISDYINKWIFVTITNRLGNSRIYING 833
 QY 181 NLIDEKSIISNLGDIHVSNDILFKIVGNCNDRYVIRYKPKVDTLKGTEIETLYSDPDP 240
 DB 834 NLIDEKSIISNLGDIHVSNDILFKIVGNCNDRYVIRYKPKVDTLKGTEIETLYSDPDP 893
 QY 241 SILKDFWGNLYLLYKRYLLNLLRTDKSITQNSNPLNINQORGVYQKPNIFSNTRLYTGV 300
 DB 894 SILKDFWGNLYLLYKRYLLNLLRTDKSITQNSNPLNINQORGVYQKPNIFSNTRLYTGV 953
 QY 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIKLIRTSNSN 360
 DB 954 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIKLIRTSNSN 1013

Qy 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSGCFWS 420
Db 1014 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSGCFWS 1073

Qy 421 FISKEHGWQEN 431
Db 1074 FISKEHGWQEN 1084

RESULT 15

AAE07900
ID AAE07900 standard; protein; 1092 AA.

XX AC AAE07900;

XX DT 01-NOV-2001 (first entry)

XX DE C. botulinum C2 translocation domain with BoNT/F-binding domain #1.

XX KW Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
KW tumour; infection; neurodegenerative disease; gene therapy;
KW botulinum neurotoxin type F; BoNT/F.

XX OS Clostridium botulinum.

XX PN WO200158936-A2.

XX PD 16-AUG-2001.

XX PF 04-DEC-2000; 2000WO-GB004644.

XX PR 02-DEC-1999; 99GB-00028530.

XX PR 07-APR-2000; 2000GB-00008658.

XX PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX PI Shone CC, Sutton JM, Silman N;

XX DR WPI; 2001-514643/56.

XX PT New non toxic polypeptide for delivery of a therapeutic agent for the
PT treatment of a CNS disorder comprising a binding domain that translocates
PT the therapeutic agent into the neuronal cells.

XX PS Example 2; Page 47; 50pp; English.

XX CC The invention relates to a non toxic polypeptide, for delivery of a
CC therapeutic agent to a neuronal cell, which comprises a binding domain
CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
CC Hc) that binds to the neuronal cell and a translocation domain (amino
CC terminal half of HC, designated as HN), that translocates the therapeutic
CC agent into the neuronal cell, where the translocation domain is not a HN
CC domain of a clostridial neurotoxin and is not a fragment or derivative of
CC a HN domain of a clostridial toxin. Polypeptides of the invention are
CC useful for the treatment of a disease state associated with neuronal
CC cells. The polypeptide constructs are useful for delivering therapeutic
CC substances to neuronal cells. They are useful to treat disorders of the
CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
CC and infection. They are also useful in gene therapy. The present sequence
CC is C. botulinum C2 enterotoxin translocation domain with botulinum
CC neurotoxin type F (BoNT/F) binding domain used in the exemplification of
CC the invention

XX SQ Sequence 1092 AA;

Query Match 100.0%; Score 2288; DB 4; Length 1092;

Best Local Similarity 100.0%; Pred. No. 8.5e-167; Indels 0; Gaps 0;
Matches 431; Conservative 0; Mismatches 0;

Qy 1 SYTNDKILLYFNKLYKKIKDMSILDMRYENKFKIDISGYSNISINGDVYIYSTNRNQF 60
Db 662 SYTNDKILLYFNKLYKKIKDMSILDMRYENKFKIDISGYSNISINGDVYIYSTNRNQF 721

Qy 61 GIYSKSEVNIQAQNDIIYNGRYQNFISFWVRIPKYFNKVNLANNEYTIIDCIRNNNSG 120
Db 722 GIYSKSEVNIQAQNDIIYNGRYQNFISFWVRIPKYFNKVNLANNEYTIIDCIRNNNSG 781
Qy 121 WKISLNTNKKIITWLTQDTAGNKKLVFNNTQMSISDYINKWIFVTITNNLGNRIYING 180
Db 782 WKISLNTNKKIITWLTQDTAGNKKLVFNNTQMSISDYINKWIFVTITNNLGNRIYING 841
Qy 181 NLIDEXSISNLGDIHVSNDNLFKIVGCDNTRYGVIRYFKVFDTELKTEIETLYSDEPDP 240
Db 842 NLIDEXSISNLGDIHVSNDNLFKIVGCDNTRYGVIRYFKVFDTELKTEIETLYSDEPDP 901
Qy 241 SILKDFWNGYLLYNKRYLLNLLRTDKSITQNSNFLNINQORGVYQKPNFNTRLTYGV 300
Db 902 SILKDFWNGYLLYNKRYLLNLLRTDKSITQNSNFLNINQORGVYQKPNFNTRLTYGV 961
Qy 301 EVIIRKNGSTDISTNDNFVRKNDLAYINNVDRDVEYRLYADISIAKPEKIIKLIRTSNSN 360
Db 962 EVIIRKNGSTDISTNDNFVRKNDLAYINNVDRDVEYRLYADISIAKPEKIIKLIRTSNSN 1021
Qy 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSGCFWS 420
Db 1022 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSGCFWS 1081
Qy 421 FISKEHGWQEN 431
Db 1082 FISKEHGWQEN 1092

Search completed: March 2, 2006, 00:38:55
Job time : 209.5 secs

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GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:39:17 ; Search time 36 Seconds
(without alignments)
1151.928 Million cell updates/sec

Title: US-08-981-087b-1

Perfect score: 2288

Sequence: 1 SYTNDKILLYFNKLYKKIK.....TSSNGCFWSPISKHGQEN 431

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 283416 seqs, 96216763 residues

Total number of hits satisfying chosen parameters: 283416

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : PIR_80.*

1: pir1.*

2: pir2.*

3: pir3.*

4: pir4.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	1833	80.1	1274	2 I40813	neurotoxin type F
2	1827	79.9	1268	2 S33411	botulinum neurotox
3	1457.5	63.7	1252	2 S21178	botulinum neurotox
4	1426	62.3	1251	2 JH0256	botulinum neurotox
5	1120.5	49.0	1296	1 BTCLAB	bontoxilysin (EC 3
6	1092.5	47.7	1296	2 I40645	botulinum neurotox
7	816	35.7	366	2 S48110	neurotoxin type F
8	781	34.1	1291	2 I40631	non-proteolytic bo
9	769	33.6	1291	1 A48940	bontoxilysin (EC 3
10	736.5	32.2	1297	2 S39791	neurotoxin - Clost
11	645.5	28.2	369	2 S48109	neurotoxin type F
12	590.5	25.8	367	2 S48106	neurotoxin type E
13	580.5	25.4	1276	2 S11455	botulinum neurotox
14	553	24.2	1315	1 BTCLTN	tentoxilysin (EC 3
15	546	23.9	1291	2 A49777	botulinum neurotox
16	546	23.9	1291	2 S46431	botulinum neurotox
17	508	22.2	1285	2 S70582	botulinum neurotox
18	267	11.7	1162	2 I40817	botulinum toxin no
19	260	11.4	1162	2 A47708	progenitor toxin n
20	259	11.3	1193	2 S68218	botulinum neurotox
21	244	10.7	1193	2 JCA4901	nontoxic-nonhemag
22	225.5	9.9	1196	2 J01467	toxin, nontoxic co
23	225.5	9.9	1196	2 S46430	botulinum neurotox
24	208.5	9.1	1165	2 I40644	botulinum neurotox
25	201	8.8	122	2 A53878	type E neurotoxin
26	190	8.3	1844	2 D71612	hypothetical prote
27	172.5	7.5	2136	2 A05037	hypothetical prote
28	169	7.4	4688	2 P82885	hypothetical prote
29	165.5	7.2	960	2 S72284	DNA-directed RNA p

ALIGNMENTS

RESULT 1

I40813

neurotoxin type F - Clostridium botulinum

C:Species: Clostridium botulinum

C:Date: 16-Aug-1996 #sequence_revision 16-Aug-1996 #text_change 09-Jul-2004

C:Accession: I40813; S48108

R:East, A.K.; Richardson, P.T.; Allaway, D.; Collins, M.D.; Roberts, T.A.; Thompson, D.E

FEMS Microbiol. Lett. 96, 225-230, 1992

A:Title: Sequence of the gene encoding type F neurotoxin of Clostridium botulinum.

A:Reference number: S48103; MUID:94013372; PMID:8408542

A:Accession: S48108

A:Status: preliminary; translation not shown

A:Molecule type: DNA

A:Residues: 1-1274 <RES>

A:Cross-references: UNIPROT:P30996; UNIPARC:UPI00000126B8A; GB:M92906; NID:9144866; PIDN:

R:Campbell, K.D.; Collins, M.D.; East, A.K.

J. Clin. Microbiol. 31, 2255-2262, 1993

A:Title: Gene probes for identification of the botulin neurotoxin gene and specific id

A:Reference number: S48103; MUID:94013372; PMID:8408542

A:Accession: S48108

A:Status: preliminary; translation not shown

A:Molecule type: DNA

A:Residues: 634-1002 <CAM>

A:Cross-references: UNIPARC:UPI0000016EA7B; EMBL:X70816; NID:9407788; PIDN:CAA50147.1; P1

C:Superfamily: tetanus toxin

C:Keywords: neurotoxin

Query Match 80.1%; Score 1833; DB 2; Length 1274;
Best Local Similarity 81.3%; Pred. No. 8.4e-98;
Matches 352; Conservative 33; Mismatches 40; Indels 8; Gaps 4;

Qy 1 SYTNDKILLYFNKLYKKIKNSILDMRYENKKEIDISGYGNSISINGDVVYYSNNQF 60
Db 847 SYTNDKILLYFNRLYKKIKDSSILDMRYENKKEIDISGYGNSISINGDVVYYSNNQF 906
Qy 61 GYSSKSEVNIAQNDIYNGRYONFISFWPRIPKYNKVNLLNNEYTIIDCTNNNSG 120
Db 907 GYNSRSEVNIAQNDIYNSRYONFISFWPRIPKYNKVNLLNNEYTIIDCTNNNSG 966
Qy 121 WKISLNVNK---IITWLTQDTAGNNKLVNTOMISISDYINKWIFVITNNRLGNSRIY 177
Db 967 WKISLTVRDCIEIITWLTQDTSGNKENLIFRYEELNRSINRYINKWIFVITNNRLGNSRIY 1026
Qy 178 INGNLIDKESISNLDIHVSNDNLLFKIVGCMNDTRYGVIRYKVPDTELKTEIETLYSDE 237
Db 1027 INGNLIVEKISNLDIHVSNDNLLFKIVGCMNDTRYGVIRYKVPDTELKTEIETLYSNE 1086
Qy 238 PDPSTLKDFWGNLYLLYKRYLLNLLRTDKSITONSNFLNINQQRGVYQKPNIFSNRLY 297
Db 1087 PDPSTLKDFWGNLYLLYKRYLLNLLRTDKSITONSNFLNINQQRGVYQKPNIFSNRLY 1145
Qy 298 TGVEVIRKNGSTDISTNDNFVRKNDLAYINVVDREVEYRLYADISIAKPEKIIKLIRTS 357

hypothetical prote
DNA-directed RNA p
hypothetical prote
hypothetical prote
hypothetical prote
DNA-directed RNA p
hypothetical prote
hypothetical prote
hypothetical prote
hypothetical prote
ATP-dependent Clp
hypothetical prote
protein with 5'-3'
toxin-like outer m

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||||| 1146 EGVEVIRKGGPDISDINDFVRKNDLAYINVDRGVEYRIAD- ---TKSEK-EKIRTS 1201
||||| 358 NSNNSLQGIIVMDSIGNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGC 417
||||| 1202 NLNDSLQGIIVMDSIGNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGC 1261
||||| 418 FWSFISKEHQWE 430
||||| 1262 FWSFISKEHQWE 1274

RESULT 2
S33411
botulinum neurotoxin type F - Clostridium baratii
C/Species: Clostridium baratii
C/Date: 13-Jan-1995 #sequence_revision 13-Jan-1995 #text_change 09-Jul-2004
C/Accession: S33411; S31860
R/Thompson, D.E.; Hutson, R.A.; East, A.K.; Allaway, D.; Collins, M.D.; Richardson, P.T.
FEMS Microbiol. Lett. 108, 175-182, 1993
A/Title: Nucleotide sequence of the gene coding for Clostridium baratii type F neurotoxin
A/Reference number: S33411; MUID:93252228; PMID:8486245
A/Accession: S33411
A/Status: preliminary
A/Molecule type: DNA
A/Residues: 1-1268 <THO>
A/Cross-references: UNIPROT:Q45851; UNIPARC:UPI000000BAPF8C; EMBL:X68262; NID:949138; PIDN
C/Superfamily: tetanus toxin
C/Keywords: neurotoxin

Query Match 79.9%; Score 1827; DB 2; Length 1268;
Best Local Similarity 78.8%; Pred. No. 1.8e-97;
Matches 338; Conservative 38; Mismatches 53; Indels 0; Gaps 0;

QY 2 YTNDKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYGNSINISGDIYVYISNRRNQFG 61
||||| 840 YTNDKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYGNSINISGDIYVYISNRRNQFG 899
||||| 62 IYSSKPSSEVNTAQNNDIYNGRYQNFISFWVRIPKYPKYNKLNNEVYIICIRNNNSGW 121
||||| 900 IYSSRUSEVNTQNNTIYNSRYQNFISFWVRIPKYPKYNKLNNEVYIICIRNNNSGW 959
||||| 122 KISLNYNKIITWLODTAGNNOKLVFNVTOMISIDYINKWIFVITNNRLGNSRIYNGN 181
||||| 960 KISLNYNKIITWLODTAGNNOKLVFNVTOMISIDYINKWIFVITNNRLGNSRIYNGN 1019
||||| 182 LIPEKSTSNIGDIHVSNDNIIKFIKVGNDTRYGVIRYKPKVFDTELKTEIETLYSDEPDPS 241
||||| 1020 LTQKSTILNLGNIHVDDNIIKFIKVGNDTRYGVIRYKPKVFDTELKTEIETLYSDEPDST 1079
||||| 242 ILKDFWGNLYLLYKRYVLLNLRDTSITONSFLNINQORGYVYKQNFISNTRLYTQVE 301
||||| 1080 ILKDFWGNLYLLYKRYVLLNLRDTSITONSFLNINQORGYVYKQNFISNTRLYTQVE 1139
||||| 302 VIIRKNGSTDISNTDNFVRKNDLAYINVDRDVEYRLYADISIAKPKIKIARTSNNSN 361
||||| 1140 VIIRKNGSTDISNTDNFVRKNDLAYINVDRDVEYRLYADISIAKPKIKIARTSNNSY 1199
||||| 362 SLOQIIVMDSIGNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGCFWSP 421
||||| 1200 NSNQMIIMDSIGNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGCFWSP 1259
||||| 422 ISKEHQWE 430
||||| 1260 ISKEHQWE 1268

RESULT 3
S21178
botulinum neurotoxin type E precursor - Clostridium botulinum
C/Species: Clostridium botulinum
C/Date: 30-Sep-1993 #sequence_revision 30-Sep-1993 #text_change 31-Dec-2004
C/Accession: S21178; S48107; JH0257; B35294; A60027; S18111
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R/Whelan, S.M.; Elmore, M.J.; Bodeworth, N.J.; Atkinson, T.; Minton, N.P.
Eur. J. Biochem. 204, 657-667, 1992
A/Title: The complete amino acid sequence of the Clostridium botulinum type-E neurotoxin
A/Reference number: S21178; MUID:92174922; PMID:1541280
A/Accession: S21178
A/Molecule type: DNA
A/Residues: 1-1252 <WHE>
A/Cross-references: UNIPROT:Q00496; UNIPROT:Q045862; UNIPARC:UPI00000010A3; EMBL:X62683;
R/Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A/Title: Gene probes for identification of the botulinum neurotoxin gene and specific
A/Reference number: S48103; MUID:94013372; PMID:8408542
A/Accession: S48107
A/Status: preliminary; nucleic acid sequence not shown; translation not shown
A/Molecule type: DNA
A/Residues: 616-982 <CAM>
A/Cross-references: UNIPARC:UPI000000BC6F0; EMBL:X70815; NID:9407786; PIDN:CAA50146.1; P
A/Note: the nucleotide sequence was submitted to the EMBL Data Library, January 1993
R/Poulet, S.; Hauser, D.; Quanz, M.; Niemann, H.; Popoff, M.R.
Biochem. Biophys. Res. Commun. 183, 107-113, 1992
A/Title: Sequences of the botulinum neurotoxin E derived from Clostridium botulinum type
A/Reference number: JH0256; MUID:92181428; PMID:1543481
A/Accession: JH0257
A/Status: nucleic acid sequence not shown
A/Molecule type: DNA
A/Residues: 1-176, 'R', 178-197, 'C', 199-339, 'R', 341-772, 'I', 774-962, 'FE', 965-966, 'R', 968-
A/Cross-references: UNIPARC:UPI000016EA7F; EMBL:X62089; NID:940393; PIDN:CAA43999.1; PII
A/Experimental source: strain Beluga
R/Binz, T.; Kurazono, H.; Wille, M.; Frevert, J.; Wernars, K.; Niemann, H.
J. Biol. Chem. 265, 9153-9158, 1990
A/Title: The complete sequence of botulinum neurotoxin type A and comparison with other
A/Reference number: A35294; MUID:90264400; PMID:2160960
A/Accession: B35294
A/Status: not compared with conceptual translation
A/Molecule type: DNA
A/Residues: 1-176, 'R', 178-252 <BIN>
A/Cross-references: UNIPARC:UPI000017670F
A/Experimental source: strain Beluga
R/Gimenez, J.A.; Dasgupta, B.R.
Biochimie 72, 213-217, 1990
A/Title: Botulinum neurotoxin type E fragmented with endoproteinase Lys-C reveals the s
A/Reference number: A60027; MUID:90344918; PMID:2116911
A/Accession: A60027
A/Molecule type: protein
A/Residues: 420-427 <GIM>
A/Cross-references: UNIPARC:UPI0000176710
A/Experimental source: strain Beluga
A/Note: this fragment was generated by proteolysis with Lys-C rather than with trypsin
C/Comment: The clostridial neurotoxins are highly potent protein toxins that inhibit ne
C/Comment: The heavy chain mediates the binding of toxin to cell receptors while the li
C/Keywords: neurotoxin
F/1-422/Product: botulinum neurotoxin type E light chain #status predicted <LCH>
F/423-1252/Product: botulinum neurotoxin type E heavy chain #status predicted <HC>
F/412-426/Disulfide bonds: #status predicted

Query Match 63.7%; Score 1457.5; DB 2; Length 1252;
Best Local Similarity 63.4%; Pred. No. 3.2e-76;
Matches 276; Conservative 72; Mismatches 70; Indels 17; Gaps 7;

QY 1 SYTDDKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYGNSINISGDIYVYISNRRNQF 60
||||| 829 SYTDDKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYGNSINISGDIYVYISNRRNQF 898
||||| 61 GIYSSKPSSEVNTAQNNDIYNGRYQNFISFWVRIPKYPKYNKLNNEVYIICIRNNNS 119
||||| 889 GIYNDKLSSEVNTSQNDIYNDKYNKYNFISFWVRIPKYPKYNKLNNEVYIICIRNNNS 948
||||| 120 GWKISLNYNKIITWLODTAGNNOKLVFNVTOMISIDYINKWIFVITNNRLGNSRIY 179
||||| 949 GWKVSLSNHNELIWTLODNAGINQKAFNNGANGISDYINKWIFVITNNRLGNSRIY 1008
||||| 180 GNLIDSEKSTSNIGDIHVSNDNIIKFIKVGNDTRYGVIRYKPKVFDTELKTEIETLYSDEPD 239
||||| 949 GWKVSLSNHNELIWTLODNAGINQKAFNNGANGISDYINKWIFVITNNRLGNSRIY 1008
```

Db 1009 GNLIDQKSLNLGNHVSNDILPKIVMCYSYTRYIGIRYFNIFDKELDETEIQTLYSNEPN 1068
Qy 240 PSILKDFWGNLYLNKRYLLNLLRLTDXSI-TQNSFLNINQORGVYQKNIPTNRLYT 298
Db 1069 TNLKDFWGNLYLDKEYLLNVLKPNFIDRRKDXSTLSINNIRS-----TILLANRLYS 1123
Qy 299 GVEVIIRK--NGSTDISNTDNFVRKNDLAYIN-VVDRDVEYRLVADISIAKPEKIKLIIR 355
Db 1124 GIKVKIQRVNNSSTN----DNLVRKNDQVYINFAVSKTHLLPLVADYATTTNKETIKI-- 1177
Qy 356 TSNSNLSGQIIVMDSIGNCTMNFQNNNGNIGLGLFHSHNNLVASSWYNNIRKNTSSN 415
Db 1178 -SSSGNRFQNVVNVNVSFGV-KTNFNFKNNGNIGLGLFKADTVVASTWYTYTHMRDHTNSN 1236
Qy 416 GCFWFSFISKEHGWOE 430
Db 1237 GCFWNFISEEHGWOE 1251

RESULT 4
JH0256
botulinum neurotoxin type B precursor - Clostridium butyricum
C:Species: Clostridium butyricum
C:Date: 30-Jun-1992 #sequence_revision 15-May-1998 #text_change 09-Jul-2004
C:Accession: JH0256; S16145
R:Poulet, S.; Hauser, D.; Quanz, M.; Niemann, H.; Popoff, M.R.
Biochem. Biophys. Res. Commun. 183, 107-113, 1992
A:Title: Sequences of the botulinum neurotoxin E derived from Clostridium botulinum type
A:Reference number: JH0256; MUID:92181428; PMID:1543481
A:Accession: JH0256
A:Status: nucleic acid sequence not shown
A:Molecule type: DNA
A:Residues: 1-27, 'E', 29-1251 <POU>
A:Cross-references: UNIPARC:UPI000017670D; EMBL:X62088; NID:940379
A:Experimental source: strains ATCC 43181 and ATCC 43755
R:Fujii, N.; Kimura, K.; Yashiki, T.; Indoh, T.; Murakami, T.; Tsuzuki, K.; Yokosawa, N.
J. Gen. Microbiol. 137, 519-525, 1991
A:Title: Cloning of a DNA fragment encoding the 5'-terminus of the botulinum type E toxin
A:Reference number: S16145; MUID:91237316; PMID:2033376
A:Accession: S16145
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 1-229, 'M', 231-252 <FUJ>
A:Cross-references: UNIPARC:UPI000016EA8F; EMBL:X53180; NID:940407; PIDN:CAA37321.1; PID
A:Experimental source: strain B16340
C:Comment: The clostridial neurotoxins are toxins that inhibit neurotransmitter release
C:Superfamily: tetanus toxin
C:Keywords: neurotoxin
P:2-422/Product: botulinum neurotoxin type E light chain #status predicted <LIG>
P:423-1251/Product: botulinum neurotoxin type E heavy chain #status predicted <HEA>
P:412-426/Disulfide bonds: #status predicted

Query Match 62.3%; Score 1426; DB 2; Length 1251;
Best Local Similarity 62.8%; Pred. No 2e-74;
Matches 273; Conservative 73; Mismatches 71; Indels 18; Gaps 8;

Qy 1 SYTNDKILLYFNKLYKKIKDMSILDMRYENKKNFIDISGYSNISINGDVYIYSTNRNQF 60
Db 829 SYTDDKILISYFNKPKPKIKSSSVLNMRYKNDKYDVTSGYDSNININGDVYKYPTKNGQF 888
Qy 61 GYSSKPSFVNIAQNNDIYNGRYQNFISFWVRIPKYNK-VNLNNEYTIIDICRNNS 119
Db 889 GIYNDKLSVNISQNDYIIYDKNFNSISFWVRIPYDNKIYVNNNEYTIINCMRDNNS 948
Qy 120 GWKISLVNKKIITWLODTAGNKKLVFNVTQMTISISDYINKMIFVTITNRLGNSRIYN 179
Db 949 GWKVSLSHNEIITWLOQSGINQKLAFTNGANGISDYINKMIFVTITNDRLDGSKLYIN 1008
Qy 180 GNLIDKXSLNLGDIHVSNDILPKIVMCYSYTRYIGIRYFNIFDKELDETEIQTLYSDEPD 239
Db 1009 GNLIDKXSLNLGDIHVSNDILPKIVMCYSYTRYIGIRYFNIFDKELDETEIQTLYNNEPN 1068

Qy 240 PSILKDFWGNLYLNKRYLLNLLRLTDXSTQNS-NFLNINQORGVYQKNIPTNRLYT 298
Db 1069 ANILKDFWGNLYLDKEYLLNVLKPNFIRRTDSTLSINNIRS-----TILLANRLYS 1123
Qy 299 GVEVIIRK--NGSTDISNTDNFVRKNDLAYIN-VVDRDVEYRLVADISIAKPEKIKLIIR 355
Db 1124 GIKVKIQRVNNSSTN----DNLVRKNDQVYINFAVSKTHLLPLVADYATTTNKETIKI-- 1177
Qy 356 TSNSNLSGQIIVMDSIGNCTMNFQNNNGNIGLGLFHSHNNLVASSWYNNIRKNTSSN 415
Db 1178 -SSSGNRFQNVVNVNVSFGV-NCTMNFKNNGNIGLGLFKADTVVASTWYTYTHMRDHTNSN 1235
Qy 416 GCFWFSFISKEHGWOE 430
Db 1236 GCFWNFISEEHGWOE 1250

RESULT 5
BTCLAB
bontoxilysin (EC 3.4.24.69) A precursor - Clostridium botulinum
N:Alternate names: botulinum neurotoxin type A
C:Species: Clostridium botulinum
C:Date: 31-Mar-1993 #sequence_revision 31-Mar-1993 #text_change 09-Jul-2004
C:Accession: A35294; S09492; S68220; A33401; A53884; A60025; A27000
R:Binz, T.; Kurazono, H.; Wille, M.; Frevert, J.; Wernars, K.; Niemann, H.
J. Biol. Chem. 265, 9153-9158, 1990
A:Title: The complete sequence of botulinum neurotoxin type A and comparison with other
A:Reference number: A35294; MUID:90264400; PMID:2160960
A:Accession: A35294
A:Molecule type: DNA
A:Residues: 1-1296 <BIN>
A:Cross-references: UNIPARC:UPI0000001386; EMBL:M30196; NID:G144864; PIDN:
A:Experimental source: strain 62A, subtype A
R:Thompson, D.B.; Brehm, J.K.; Oultram, J.D.; Swinfield, T.J.; Shone, C.C.; Atkinson, T.
Eur. J. Biochem. 189, 73-81, 1990
A:Title: The complete amino acid sequence of the Clostridium botulinum type A neurotoxin
A:Reference number: S09492; MUID:90235864; PMID:2185020
A:Accession: S09492
A:Molecule type: DNA
A:Residues: 1, 'Q', 3-26, 'V', 28-1296 <THO>
A:Cross-references: UNIPARC:UPI000003409D; EMBL:X52066; NID:G40381; PIDN:CAA36289.1; PID
A:Experimental source: NCTC 2916
R:Fujita, R.; Fujinaga, Y.; Inoue, K.; Nakajima, H.; Kumon, H.; Oguma, K.
PBBS Lett. 376, 41-44, 1995
A:Title: Molecular characterization of two forms of nontoxic-nonhemagglutinin components
A:Reference number: S67988; MUID:96096783; PMID:8521962
A:Accession: S68220
A:Status: preliminary
A:Molecule type: DNA
A:Residues: 1-12 <FUJ>
A:Cross-references: UNIPARC:UPI0000173655; EMBL:D67030; DDBJ:D50421; NID:G2160224
R:Beckley, M.J.; Somers, E.; Dasgupta, B.R.
Biochem. Biophys. Res. Commun. 162, 1388-1395, 1989
A:Title: Characterization of botulinum type A neurotoxin gene: delineation of the N-term
A:Reference number: A33401; MUID:89350959; PMID:2669749
A:Accession: A33401
A:Molecule type: DNA
A:Residues: 1-35 <BET>
A:Cross-references: UNIPARC:UPI000016EA84; GB:M27892; NID:G144880; PIDN:AAA23269.1; PID
R:Gimenez, J.A.; Dasgupta, B.R.
J. Protein Chem. 12, 351-363, 1993
A:Title: Botulinum type A neurotoxin digested with pepsin yields 132, 97, 72, 45, 42, an
A:Reference number: A33884; MUID:94000342; PMID:8397793
A:Accession: A33884
A:Status: preliminary
A:Molecule type: protein
A:Residues: 867-880; 1148-1217, 'Y', 1219 <GIM>
A:Cross-references: UNIPARC:UPI00000BBB24; UNIPARC:UPI0000173656
A:Experimental source: strain Hall
A:Note: sequence extracted from NCBI backbone (NCBIP:139159); sequence modified after ex
R:Dasgupta, B.R.; Dekleva, M.L.
Biochimie 72, 661-664, 1990
A:Title: Botulinum neurotoxin type A: sequence of amino acids at the N-terminus and aro

A;Reference number: A60025; MUID:91120847; PMID:2126206

A;Accession: A60025

A;Molecule type: protein

A;Residues: 2-6;445-453,'X',455-457 <DAS1>

A;Cross-references: UNIPARC:UPI0000173657; UNIPARC:UPI0000173658

R;DasGupta, B.R.; Foley, J.; Niece, R.

Biochemistry 26, 4162, 1987

A;Title: Partial sequence of the light chain of botulinum neurotoxin type A.

A;Reference number: A27000

A;Accession: A27000

A;Molecule type: protein

A;Residues: 2-47 <DAS2>

A;Cross-references: UNIPARC:UPI0000173659

R;Binz, T.; Blasi, J.; Kamasaki, S.; Baumeister, A.; Link, E.; Suedhof, T.C.; Jahn, R.;

J. Biol. Chem. 269, 1617-1620, 1994

A;Title: Proteolysis of SNAP-25 by types E and A botulinum neurotoxins.

A;Reference number: A49708; MUID:94124495; PMID:8294407

A;Contents: annotation

C;Comment: Botulinum neurotoxins inhibit neurotransmitter release from cholinergic synap

C;Genetics:

A;Gene: atx; bota

C;Function:

A;Description: catalyzes hydrolysis of an Asn-Arg peptide bond in synaptosomal-associated

C;Superfamily: tetanus toxin

C;Keywords: disulfide bond; hydrolase; metalloproteinase; neurotoxin; transmembrane prot

F;2-444/Product: bontoxilysin A light chain #status experimental <LGHT>

F;445-1296/Product: bontoxilysin A heavy chain #status experimental <HVI>

F;223/Binding site: zinc (His) #status predicted

F;224/Active site: Glu #status predicted

Query Match 49.0%; Score 1120.5; DB 1; Length 1296;

Best Local Similarity 49.4%; Pred. No. 7.8e-57; Indels 19; Gaps 7;

Matches 219; Conservative 127; Mismatches 127;

Qy 2 YTNKILILYFNKLYKKIKNSILDMRYENKFKIDISGYSNIGSINGDVYIYSTRNQFG 61

Db 856 YVDNQRLSTFTYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 915

Qy 62 IYSSKPSVNTAQNNDIYNGRYONFSFWVRIPKYPKVNKLNNETIIDCIRNNSGW 121

Db 916 LFNLESSKIEVLKNAIVNYSNMFSTFWIPKYPKVNKLNNETIINCENNSGW 974

Qy 122 KISLNKIIITLQDTAGNNQKLVFNFTQMSISDYINKWIFVFTITNNLGNRIYINGN 181

Db 975 KVSNLNGEIIITLQDNKQNIQVVFYKYSQWNLSDYINWIFVFTITNNLTKSKIYINGR 1034

Qy 182 LIDKSIISNLGDIHVSNDILFKIVGNDT-RYVGIRYFKVDFTELKTEIETLYSDEPDP 240

Db 1035 LIDQKPIISNLGNTHASNNIMFKLDGCRDTHRYIWKYPNLFDKELNEIKDLYDNQNS 1094

Qy 241 SILKDPWGNLYLKYRYLLNLLRTDKSITONS-----NFLINQORGVYQKPIFSNTRL 296

Db 1095 GILKDPWGDYLYQDKPYMLNLYDNKYVDVNNVIGIRGYMLKGRGVSMTTNIYLNSSL 1154

Qy 297 YTGVEIIRKNGSTDISTNDNFVRKNDLAYINVDVDRVEYRLYADISIAKEPIIKLIRT 356

Db 1155 YRGTKFIKKYAS---GNEDNIVRNDRVYINVVKNKEVRLATNASQAGVEKILSALEI 1211

Qy 357 SNSNNSLQGIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN----LVASSWYNN 407

Db 1212 PDVGN-LSQVVMVMSKDDQGIIRKCKMNLQDNGNDIGFIFGHFNIAKLVASNWNQ 1270

Qy 408 IRKNTSSNGCWFWSFKSKHGQGE 430

Db 1271 IERSRTILGCSWEFIPVDDGWGE 1293

RESULT 6

I40645

botulinum neurotoxin type A - Clostridium botulinum

C;Species: Clostridium botulinum

C;Date: 12-Aug-1996 #sequence_revision 12-Aug-1996 #text_change 09-Jul-2004

C;Accession: I40645

R;Willems, A.; East, A.K.; Lawson, P.A.; Collins, M.D.

Res. Microbiol. 144, 547-556, 1993

A;Title: Sequence of the gene coding for the neurotoxin of Clostridium botulinum type A

A;Reference number: I40645; MUID:94143603; PMID:8310180

A;Accession: I40645

A;Status: preliminary; translated from GB/EMBL/DBBJ

A;Molecule type: DNA

A;Residues: 1-1296 <RES>

A;Cross-references: UNIPROT:Q45894; UNIPARC:UPI000016EA88; EMBL:X73423; NID:g507070; PII

C;Superfamily: tetanus toxin

C;Keywords: neurotoxin

Query Match 47.7%; Score 1092.5; DB 2; Length 1296;

Best Local Similarity 48.6%; Pred. No. 3.2e-55;

Matches 216; Conservative 76; Mismatches 133; Indels 19; Gaps 7;

Qy 2 YTNKILILYFNKLYKKIKNSILDMRYENKFKIDISGYSNIGSINGDVYIYSTRNQFG 61

Db 856 YVDNQRLSTFTYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIK 915

Qy 62 IYSSKPSVNTAQNNDIYNGRYONFSFWVRIPKYPKVNKLNNETIIDCIRNNSGW 121

Db 916 LFNLESSKIEVLKNAIVNYSNMFSTFWIPKYPKVNKLNNETIINCENNSGW 974

Qy 122 KISLNKIIITLQDTAGNNQKLVFNFTQMSISDYINKWIFVFTITNNLGNRIYINGN 181

Db 975 KVSNLNGEIIITLQDNKQNIQVVFYKYSQWNLSDYINWIFVFTITNNLTKSKIYINGR 1034

Qy 182 LIDKSIISNLGDIHVSNDILFKIVGNDT-RYVGIRYFKVDFTELKTEIETLYSDEPDP 240

Db 1035 LIDQKPIISNLGNTHASNNIMFKLDGCRDTHRYIWKYPNLFDKELNEIKDLYDNQNS 1094

Qy 241 SILKDPWGNLYLKYRYLLNLLRTDKSITONS-----NFLINQORGVYQKPIFSNTRL 296

Db 1095 GILKDPWGDYLYQDKPYMLNLYDNKYVDVNNVIGIRGYMLKGRGVSMTTNIYLNSSL 1154

Qy 297 YTGVEIIRKNGSTDISTNDNFVRKNDLAYINVDVDRVEYRLYADISIAKEPIIKLIRT 356

Db 1155 YRGTKFIKKYAS---GNEDNIVRNDRVYINVVKNKEVRLATNASQAGVEKILSALEI 1211

Qy 357 SNSNNSLQGIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN----LVASSWYNN 407

Db 1212 PDVGN-LSQVVMVMSKDDQGIIRKCKMNLQDNGNDIGFIFGHFNIAKLVASNWNQ 1270

Qy 408 IRKNTSSNGCWFWSFKSKHGQGE 431

Db 1271 VGRASRTILGCSWEFIPVDDGWGES 1294

RESULT 7

S48110

neurotoxin type F - Clostridium botulinum (fragment)

C;Species: Clostridium botulinum

C;Date: 14-Jul-1995 #sequence_revision 10-Nov-1995 #text_change 09-Jul-2004

R;Campbell, K.D.; Collins, M.D.; East, A.K.

J. Clin. Microbiol. 31, 2255-2262, 1993

A;Title: Gene probes for identification of the botulinum neurotoxin gene and specific i

A;Reference number: S48103; MUID:94013372; PMID:8408542

A;Accession: S48110

A;Status: preliminary; translation not shown

A;Molecule type: DNA

A;Residues: 1-366 <CAM>

A;Cross-references: UNIPROT:Q57236; UNIPARC:UPI000016EA7C; EMBL:X70821; NID:g407792; PII

C;Superfamily: tetanus toxin

C;Keywords: neurotoxin

Query Match 35.7%; Score 816; DB 2; Length 366;

Best Local Similarity 100.0%; Pred. No. 5.3e-40;

Matches 153; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNKILILYFNKLYKKIKNSILDMRYENKFKIDISGYSNIGSINGDVYIYSTRNQF 60

|||||

Db 214 SYTNDKILLYFNKLYKKIKDNSILDMRYENNKFDISGYNSISNGVDVYIYSTRNQF 273
 Qy 61 GIYSKSEVNIAQNNDIYNGRYONFSPISFWVRIPKYNKVNLANNEVTIIDCIRNNNSG 120
 Db 274 GIYSKSEVNIAQNNDIYNGRYONFSPISFWVRIPKYNKVNLANNEVTIIDCIRNNNSG 333
 Qy 121 WKISLNTYKIIWTIQTADGNNOKLVFNFTOMIS 153
 Db 334 WKISLNTYKIIWTIQTADGNNOKLVFNFTOMIS 366
 RESULT 8
 140631
 non-proteolytic botulinum neurotoxin type B precursor - Clostridium botulinum
 C:Species: Clostridium botulinum
 C:Date: 12-Aug-1996 #sequence_revision 12-Aug-1996 #text_change 09-Jul-2004
 R:Hutson, R.A.; Collins, M.D.; East, A.K.; Thompson, D.E.
 Curr. Microbiol. 28, 101-110, 1994
 A:Title: Nucleotide sequence of the gene coding for non-proteolytic Clostridium botulinum
 A:Reference number: 140631; MUID:94122659; PMID:7764370
 A:Accession: 140631
 A:Status: preliminary
 A:Molecule type: DNA
 A:Residues: 1-1291 <RES>
 A:Cross-references: UNIPROT:008077; UNIPARC:UPI00000BDC86; EMBL:X71343; NID:G296148; PID
 R:Campbell, K.D.; Collins, M.D.; East, A.K.
 J. Clin. Microbiol. 31, 2255-2262, 1993
 A:Title: Gene probes for identification of the botulin neurotoxin gene and specific id
 A:Reference number: S48103; MUID:94013372; PMID:8408542
 A:Accession: S48103
 A:Status: preliminary
 A:Molecule type: DNA
 A:Residues: 1-1291 <WHE>
 A:Cross-references: UNIPROT:P10844; UNIPARC:UPI000016EA76; GB:M81186; NID:G144734; PIDN:
 A:Experimental source: type B, Danish
 A:Note: sequence extracted from NCBI backbone (NCBI:112080, NCBI:P112081); this publica
 R:Campbell, K.D.; Collins, M.D.; East, A.K.
 J. Clin. Microbiol. 31, 2255-2262, 1993
 A:Title: Gene probes for identification of the botulin neurotoxin gene and specific id
 A:Reference number: S48103; MUID:94013372; PMID:8408542
 A:Accession: S48103
 A:Status: preliminary
 A:Molecule type: DNA
 A:Residues: 634-843, 'T', 845, 'N', 847-994 <CAM2>
 A:Cross-references: UNIPARC:UPI00000B7A6E; EMBL:X70819; NID:G407780; PIDN:CAAS0150.1; PI
 A:Experimental source: non-proteolytic strain Eklund 2B (Colworth 229)
 C:Comment: Botulinum neurotoxin type B in these strains may possess a capable catalytic a
 C:Genetics:
 A:Gene: bont/b
 C:Superfamily: tetanus toxin
 C:Keywords: metalloprotein; neurotoxin; transmembrane protein; zinc
 P:2-441/Product: botulinum neurotoxin type B light chain #status predicted <LGHT>
 P:442-1291/Product: botulinum neurotoxin type B heavy chain #status predicted <HVT>
 P:230,234/Binding site: zinc (His) #status predicted
 P:231/Active site: Glu #status predicted
 Query Match 34.1%; Score 781; DB 2; Length 1291;
 Best Local Similarity 37.0%; Pred. No. 2,5e-37;
 Matches 174; Conservative 90; Mismatches 146; Indels 60; Gaps 14;
 Qy 1 SYTNDKILLYFNKLYKKIKDNSILDMRYENNKFDISGYNSISNGVDVYIYSTRNQF 60
 Db 842 TYSNTEILIKIFNKYNSEILNLIILRYDRNLDLSGYGAKVEVDGVLK--NDKQNF 899
 Qy 61 GIYSKSEVNIAQNNDIYNGRYONFSPISFWVRIPKYNKVNLANNEVTIIDCIRNN 117
 Db 900 KLTSSADSKIRVTQNIQNIIFNSMFLDVSFWIRPKYRNDIQNIYHNEYITLNCM-K 958
 Qy 118 NSGKISLNNKIIWTIQTADGNNOKLVFNFTOMISIDYINKWIFVTITNNLNSRIY 177
 Db 959 NSGKISIRGNRIIWTIQTADGNNOKLVFNFTOMISIDYINKWIFVTITNNLNSRIY 1017
 Qy 178 INGNLDEKISNLGDIHVDNLIKVGKND-TRYGVIRYKPVFDTGLKTEITLTVSD 236
 Db 1018 INGTLESNDIKDIGEVNIGBITFKLDGVDVDTQPIWKKYFSIFNTQLNQSNKIEIYKI 1077

Qy 237 EPPDSILKDFWGNLYLNNKYIYLLNL-----LRTDKSI-----TQNSNFNLIN 279
 Db 1078 QSYSEYKDFWGNPLWYKYNKYNMAGNKNYSIKLVKDSVSGEILIRSKYNQNSNYINR 1137
 Qy 280 QQRGVYQKPIFNTRLYTGVEVLIIRKNGSTDLSNTDNFVRKNDLAVINVVDRDVEVRLY 339
 Db 1138 -----NLYIGEKFIIRRESNSQSIN-DDIVRKEDYIHLDLVLLHHEWRVY 1181
 Qy 340 ADISIAKPEKIIKIRTSNNSNLGQIIVM---DSIGNNCTMNFQNN--NGSIGLLGFH 394
 Db 1182 AYKYFKEQBEKLFSLIISDSNEFYKTEIKYEDEQPSYSCQLLPKDBEESTDDIGLIGIH 1241
 Qy 395 -----SNNLVASWYNNI-RONTSSN-GCFWFSFISKEHWOE 430
 Db 1242 RFVESGVLRRKKYKDYFCISKWYLKVRKPYKSNLGCNWOPIPKDEGWTE 1291
 RESULT 9
 A48940
 bontoxilysin (EC 3.4.24.69) B precursor - Clostridium botulinum
 N:Alternate names: botulinum neurotoxin type B (BoNT/B)
 C:Species: Clostridium botulinum
 C:Date: 19-Dec-1993 #sequence_revision 18-Nov-1994 #text_change 09-Jul-2004
 A:Accession: A48940; S48105; S21575; A42871; S07155; S08562; S07128; S08573; S08574
 R:Whelan, S.M.; Elmore, M.J.; Bodsworth, N.J.; Brehm, J.K.; Atkinson, T.; Minton, N.P.
 Appl. Environ. Microbiol. 58, 2345-2354, 1992
 A:Title: Molecular cloning of the Clostridium botulinum structural gene encoding the type
 A:Reference number: A48940; MUID:92384550; PMID:1514783
 A:Accession: A48940
 A:Status: preliminary
 A:Molecule type: DNA
 A:Residues: 1-1291 <WHE>
 A:Cross-references: UNIPROT:P10844; UNIPARC:UPI000016EA76; GB:M81186; NID:G144734; PIDN:
 A:Experimental source: type B, Danish
 A:Note: sequence extracted from NCBI backbone (NCBI:112080, NCBI:P112081); this publica
 R:Campbell, K.D.; Collins, M.D.; East, A.K.
 J. Clin. Microbiol. 31, 2255-2262, 1993
 A:Title: Gene probes for identification of the botulin neurotoxin gene and specific id
 A:Reference number: S48103; MUID:94013372; PMID:8408542
 A:Accession: S48103
 A:Status: preliminary
 A:Molecule type: DNA
 A:Residues: 634-994 <CAM>
 A:Cross-references: UNIPARC:UPI000016EA7A; EMBL:X70817; NID:G407782; PIDN:CAAS0148.1; PI
 A:Experimental source: proteolytic type B, strain NCTC 7273
 R:Szabo, E.A.; Pemberton, J.M.; Desmarchelier, P.M.
 submitted to the EMBL Data Library, April 1992
 A:Description: Partial amino acid sequence of botulinum neurotoxin type B and compariso
 A:Reference number: S21575
 A:Accession: S21575
 A:Molecule type: DNA
 A:Residues: 36-217, 'G', 219-224, 'S', 226-246 <SZA>
 A:Cross-references: UNIPARC:UPI000016EA79; EMBL:Z11334; NID:G40383; PIDN:CA77991.1; PID
 R:Kurazono, H.; Mochida, S.; Binz, T.; Eisel, U.; Quanz, M.; Grebenstein, O.; Wernars, K
 J. Biol. Chem. 267, 14721-14729, 1992
 A:Title: Minimal essential domains specifying toxicity of the light chains of tetanus to
 A:Reference number: A42871; MUID:92340509; PMID:1634516
 A:Accession: A42871
 A:Status: nucleic acid sequence not shown
 A:Molecule type: mRNA
 A:Residues: 1-313, 'S', 315-451 <KUR>
 A:Cross-references: UNIPARC:UPI000000B3742
 A:Experimental source: strain Okra
 A:Note: sequence extracted from NCBI backbone (NCBI:109365)
 R:Daegupta, B.R.; Datta, A.
 Biochimie 70, 811-817, 1988
 A:Title: Botulinum neurotoxin type B (strain 657): partial sequence and similarity with
 A:Reference number: S07155; MUID:89000987; PMID:3139097
 A:Accession: S07155
 A:Molecule type: protein
 A:Residues: 2-29, 'M', 31-45 <DAS>
 A:Cross-references: UNIPARC:UPI00000173650
 A:Accession: S08562

A;Molecule type: protein
A;Residues: 442-463, R', 465-467 <DA2>
A;Cross-references: UNIPARC:UPI0000173650
R;Schmidt, J.J.; Sathyanarayanan, V.; DasGupta, B.R.
Arch. Biochem. Biophys. 238, 544-548, 1985
A;Title: Partial amino acid sequences of botulinum neurotoxins types B and E.
A;Reference number: S07128; MUID:95197963; PMID:3888113
A;Accession: S07128
A;Status: preliminary
A;Molecule type: protein
A;Residues: 2-16 <SCH1>
A;Cross-references: UNIPARC:UPI0000173652
A;Accession: S08573
A;Status: preliminary
A;Molecule type: protein
A;Residues: 2-17 <SCH2>
A;Cross-references: UNIPARC:UPI0000173652
A;Accession: S08574
A;Status: preliminary
A;Molecule type: protein
A;Residues: 442-459 <SCH3>
A;Cross-references: UNIPARC:UPI0000173652
R;Schiaivo, G.; Benfenati, F.; Poulain, B.; Rossetto, O.; de Laureto, P.P.; DasGupta, B.R.
Nature 359, 832-835, 1992
A;Title: Tetanus and botulinum-B neurotoxins block neurotransmitter release by proteolytic
A;Reference number: S27125; MUID:93063293; PMID:1331807
A;Contents: annotation
A;Comment: Botulinum neurotoxins inhibit neurotransmitter release from cholinergic synap
A;Genetics:
A;Gene: bont/b
A;Function:
A;Description: catalyzes hydrolysis of a Gln-Phe peptide bond in synaptobrevin 2
C;Superfamily: tetanus toxin
C;Keywords: hydrolase; metalloproteinase; neurotoxin; transmembrane protein; zinc
F;2-441/Product: bontoxilysin B light chain #status experimental <LIGHT>
F;442-1291/Product: bontoxilysin B heavy chain #status experimental <HVY>
F;230,234/Binding site: zinc (His) #status predicted
F;231/Active site: Glu #status predicted

Query Match 33.6%; Score 769; DB 1; Length 1291;
Best Local Similarity 36.0%; Pred. No. 1.2e-36;
Matches 169; Conservative 88; Mismatches 152; Indels 60; Gaps 13;

Qy 2 YTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYSGNISGNGDVVYIYSTNRNQFG 61
Db 843 YTNDTILIEFNKYNSEILNLIILRYKNNLIDLSYGAKVAVYDGVEL--NDKKNQFK 900

Qy 62 IYSKPSEVNIAQNNDIYNGRYQNFISFVWRIPKYPN---KVNLANEYTIIDICIRNN 118
Db 901 LTSSANSKIRVTQNIIFNSVFLDFSVFWRIPKYNQDQIYHNEYTIINCMK-NN 959

Qy 119 SGWKISLNNYKIITWLODTAGNKKLVNFTOMISIDYINKWIFVTITNRLGNSRIYI 178
Db 960 SGWKISIRGNRIITWLDINGKTSVFPYENIREDISYINRWPFVITTN-LNNAKIYI 1018

Qy 179 NGNLIDEKSIENLGDHVSNDILFKIVGCD-TRVVGIRYKVPDTGLGTEIETLYSDE 237
Db 1019 NGKLESNTDIKDIREVIANGEIIFKLDGIDRTQTFIMWKYFISFTELTSQNSIERVKIQ 1078

Qy 238 PDPSILKDFWGNLYLLNRYKRYLLN-----LRTDKSI-----TQNSNPLNIQ 280
Db 1079 SYSEYLDKDFWGNPLMYNKEYWFMAGNKNYSIKLKDSVPGEILLTRSKYNQSNKYINVD 1138

Qy 281 QRGVYQKPNIFSTRLTYTGEVIRKNGSTDISNTDNFVRKNDLAYINVDVDRDYRLIYA 340
Db 1139 -----LYIGEKFIIRKNSQSIN-DDIVRKEDYIYLDFFNLNQEWRVYT 1182

Qy 341 DISTAKPEKLIKLTSTNNSLGOIIVM---DSIGNNCTNWFQNN---NGGNIGLIGPH- 394
Db 1183 YKYPKKEEKLFLAPISDSFYNTIQIKVEYDQPTYSCQLLFKDEESTDEIGLIGHR 1242

Qy 395 -----SNNLVAGSWTYNNIRKN--TSSNGCFWSFISKEHGWOE 430

Db 1243 FYESGIVFEEYKDYFCISKWYLKEVKRKPYNLKGNCWQFIPKDEGWE 1291

RESULT 10
S39791
neurotoxin - Clostridium botulinum
C;Species: Clostridium botulinum
C;Date: 07-Oct-1994 #sequence_revision 01-Dec-1995 #text_change 16-Jul-1999
C;Accession: S39791
R;Campbell, K.; Collins, M.D.; East, A.K.
Biochim. Biophys. Acta 1216, 487-491, 1993
A;Title: Nucleotide sequence of the gene coding for Clostridium botulinum (Clostridium
A;Reference number: S39791; MUID:94092745; PMID:8268233
A;Accession: S39791
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-1297 <CAM>
A;Cross-references: UNIPARC:UPI0000176706; EMBL:X74162; NID:9441275; PIDN:CAAS2275.1; P
C;Superfamily: tetanus toxin
C;Keywords: neurotoxin

Query Match 32.2%; Score 736.5; DB 2; Length 1297;
Best Local Similarity 35.7%; Pred. No. 9.2e-35;
Matches 164; Conservative 76; Mismatches 179; Indels 41; Gaps 10;

Qy 2 YTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYSGNISGNGDVVYIYSTNRNQFG 61
Db 848 YTNDTILIQVFNFYINISNALLSYRGRLLDSSGYGATWVGSDFVFNIDNGQFK 907

Qy 62 IYSKPSEVNIAQNNDIYNGRYQNFISFVWRIPKYPN---KVNLANEYTIIDICIRNN 118
Db 908 LNNSENSNITAHQSKFVYDMSFDFNSINPVRTPKYNNDIQTYLQNEYTIISCIK-ND 966

Qy 119 SGWKISLNNYKIITWLODTAGNKKLVNFTOMISIDYINKWIFVTITNRLGNSRIYI 178
Db 967 SGWKVSIKGNRIITWLDVNAKSKIFFEYSIKDINSYINKWFSITITNDRIGNANIYI 1026

Qy 179 NGNLIDEKSIENLGDHVSNDILFKIVGCD-TRVVGIRYKVPDTGLGTEIETLYSDE 237
Db 1027 NGSLKSEKILNLDNRNSSNDIDFKLINCITDTTKFWIKDFNIFGRELNATEVSSLYWQ 1086

Qy 238 PDPSILKDFWGNLYLLNRYKRYLLN-----LRTDKSITQNSNPLNIQOQGVYQKN 289
Db 1087 SSTNLKDFWGNLRYDQTYLQNFQGMQNIYIKYFSKASMGETAPRTFNNAAINYQ--- 1143

Qy 290 IFNTRLYTGEVIRKNGSTDISNTDNFVRKNDLAYINVD-RDVEYRLYADISIAPKE 348
Db 1144 -----NLYLGLRFLIIKASNSRNINNDNIVREGDYIYLNIDNISDESRYRVVLVN-SKEI 1197

Qy 349 KIILKIRTSNNSLGOIIVMDSIGNNCTNWFQ---NNNGGNIGLLGF----- 393
Db 1198 QTQLFLAPINDDPTFYDVLQIKKYEYKTYTNCQILCEKDTTFLGFGKGVKDYGYVMD 1257

Qy 394 -HSNNLVASSWYNNIRKN--NGCFWSFISKEHGWOE 430
Db 1258 TYDNYFCISQWYLRRISINENKRLGNCWQFIPVDEGWE 1297

RESULT 11
S48109
neurotoxin type F - Clostridium botulinum (fragment)
C;Species: Clostridium botulinum
C;Date: 12-Feb-1998 #sequence_revision 20-Feb-1998 #text_change 09-Jul-2004
C;Accession: S48109
R;Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A;Title: Gene probes for identification of the botulin neurotoxin gene and specific i
A;Reference number: S48103; MUID:94013372; PMID:8408542
A;Accession: S48109
A;Status: preliminary; nucleic acid sequence not shown; translation not shown
A;Molecule type: DNA
A;Residues: 1-369 <CAM>
A;Cross-references: UNIPROT:P30996; UNIPARC:UPI000016EA7B; EMBL:X70820; NID:9407790; PI

A;Note: the nucleotide sequence was submitted to the EMBL Data Library, January 1993
C;Superfamily: tetanus toxin

Query Match 28.2%; Score 645.5; DB 2; Length 369;
Best Local Similarity 77.9%; Pred. No. 3.4e-30;
Matches 120; Conservative 17; Mismatches 14; Indels 3; Gaps 1;
Qy 1 SYTNDKILILYFNKLYKKIKDNLDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
Db 214 SYTNDKILILYFNRLYKKIKDSSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 273
Qy 61 GIYSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKVNKLNNVEYTIIDCIRNNNSG 120
Db 274 GIYSRLSEVNIAQNNDIYNSRYQNFISFWVRIPKYPKVNKLNNVEYTIIDCIRNNNSG 333
Qy 121 WKISLNVNKK---IWTLODTAGNNQKLVNYTQM 151
Db 334 WKISLRTVRCDEIHWTLQDTSGNKENLIPRYEEL 367

RESULT 12

S48106
neurotoxin type B - Clostridium botulinum (fragment)
C;Species: Clostridium botulinum
C;Date: 14-Jul-1995 #sequence_revision 10-Nov-1995 #text_change 09-Jul-2004
C;Accession: S48106
R;Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A;Title: Gene probes for identification of the botulinum neurotoxin gene and specific isoforms
A;Reference number: S48103; MUID:94013372; PMID:8408542
A;Accession: S48106
A;Status: preliminary; nucleic acid sequence not shown; translation not shown
A;Molecule type: DNA
A;Residues: 1-367 <CAM>
A;Cross-references: UNIPROT:Q45861; UNIPARC:UPI0000084F3D; EMBL:X70818; NID:94077884; PID:94077884
A;Note: the nucleotide sequence was submitted to the EMBL Data Library, January 1993
C;Superfamily: tetanus toxin
C;Keywords: neurotoxin

Query Match 25.8%; Score 590.5; DB 2; Length 367;
Best Local Similarity 71.8%; Pred. No. 4.8e-27;
Matches 107; Conservative 25; Mismatches 16; Indels 1; Gaps 1;
Qy 1 SYTNDKILILYFNKLYKKIKDNLDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
Db 214 SYTDDKILISYFNKFKFKIKSSVLMRYKNDKYDVTSGYDSDININGDVYKIPKKNQF 273
Qy 61 GIYSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKVNKLNNVEYTIIDCIRNNNS 119
Db 274 GIYNDKLSVNSQNDIYIDNRYKNSISFWVRIPKYPKVNKLNNVEYTIIDCIRNNNS 333
Qy 120 GWKISLNVNKKIWTLODTAGNNQKLVNY 148
Db 334 GWKVSILNHNIEIWTLODNAGINQKLVNY 362

RESULT 13

S11455
botulinum neurotoxin type D - Clostridium botulinum
C;Species: Clostridium botulinum
C;Date: 18-Feb-1994 #sequence_revision 10-Nov-1995 #text_change 09-Jul-2004
C;Accession: S11455
R;Bin, T.; Kurazono, H.; Popoff, M.R.; Eklund, M.W.; Sakaguchi, G.; Kozaki, S.; Kriegl, R.; Nucleic Acids Res. 18, 5556, 1990
A;Title: Nucleotide sequence of the gene encoding Clostridium botulinum neurotoxin type D
A;Reference number: S11455; MUID:91016853; PMID:2216736
A;Accession: S11455
A;Status: preliminary; translation not shown
A;Molecule type: DNA
A;Residues: 1-1276 <BIN>
A;Cross-references: UNIPROT:P19321; UNIPARC:UPI0000126B83; EMBL:X54254; NID:940395; PID:940395
C;Superfamily: tetanus toxin
C;Keywords: neurotoxin

Query Match 25.4%; Score 580.5; DB 2; Length 1276;
Best Local Similarity 29.4%; Pred. No. 8.4e-26;
Matches 140; Conservative 88; Mismatches 156; Indels 93; Gaps 13;
Qy 1 SYTNDKILILYFNKLYKKIKDNLDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
Db 846 SYTNSLLKDIINIEYFNISINDSKLSLQNKALVDTSYGNAEVRGVGNVOLNTIYNDP 905
Qy 61 GIYSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKVNKLNNVEYTIIDCIRNNNSG 120
Db 906 KL-SSSGDKIIVLNNILYSAIYENSSVFWIKISK-DLTNSHNEYTIINSI-EQNSG 961
Qy 121 WKISLNVNKKIWTLODTAGNNQKLVNYTQMISYDYNKWFVITNNRLGNSRIYNG 180
Db 962 WKLCIRNGNIEWLQDVNRKYKSLFDYSESLSTGTYNKWFVITNNINGMYKLYNG 1021
Qy 181 NLIDEKISNLGDIHVDNLFKI-VGCNDTRYGVIRYKVFDELTGKTELETLYSDPD 239
Db 1022 ELKQSKIEDLDEVDKTIIVFGIDENIQMLWIRDFNIFSKELSNEDINIVYEGQIL 1081
Qy 240 PSILKDFWGNVLLYNNKRYVILLNLLRTDKSIITQNSNFINQOQGVYQKPNFISNRLTYG 299
Db 1082 RNVIKDYWGPNLKEDETYIINDYIDRYIAPESNLVL-----VQYDP---RSKLYTG 1132
Qy 300 VEVIR-----KNGSTDISNTDNFVRK---NDLAYINVVDREVYRLYADISIAKPEIK 352
Db 1133 NPITIKSVSDKPNVSRILNGDNIILHMLNRSKYMIIRDTDT---IYA----- 1177
Qy 353 LIRTSNNSLGGIIVMDSIGNCTMNF-----QNNNGNIGLLGPHSNLNVASSWY--- 404
Db 1178 -----TOGECSONCVYALKQSLNLYGIGIFSKINIVSNKCYCQ 1219
Qy 405 -YNNIRKNTS-----SNGCFWSPISKEHGWQE 430
Db 1220 IFSSFRENTMLLADIYKPFWRFSKNATPVAVTYETKLLSTSSFWKIFSRDPGWVE 1276
RESULT 14
BTCLTN
tentoxilysin (EC 3.4.24.68) precursor - Clostridium tetani
N;Alternate names: tetanus neurotoxin
C;Species: Clostridium tetani
C;Date: 31-Mar-1988 #sequence_revision 31-Mar-1988 #text_change 09-Jul-2004
R;Eisel, U.; Jarausch, W.; Goretzki, K.; Henschen, A.; Engels, J.; Weller, U.; Hudel, M.; EMBO J. 5, 2495-2502, 1986
A;Title: Tetanus toxin: primary structure, expression in E. coli, and homology with botulinum toxin
A;Reference number: A25689; MUID:87053814; PMID:3536478
A;Accession: A25689
A;Molecule type: DNA
A;Residues: 1-1315 <EIS>
A;Cross-references: UNIPROT:P04958; UNIPARC:UPI000003617E; GB:X06214; NID:940773; PID:940773
R;Fairweather, N.F.; Lyness, V.A.
Nucleic Acids Res. 14, 7809-7812, 1986
A;Title: The complete nucleotide sequence of tetanus toxin.
A;Reference number: A25757; MUID:87040747; PMID:3774547
A;Accession: A25757
A;Molecule type: DNA
A;Residues: 1-1315 <FAI>
A;Cross-references: UNIPARC:UPI000003617E; GB:X06214; NID:940773; PID:940773
A;Experimental source: strain CN3911
R;Fairweather, N.F.; Lyness, V.A.; Pickard, D.J.; Allen, G.; Thomson, R.O.
J. Bacteriol. 165, 21-27, 1986
A;Title: Cloning, nucleotide sequencing, and expression of tetanus toxin fragment C in E. coli
A;Reference number: A25194; MUID:86085672; PMID:3510187
A;Accession: A25194
A;Molecule type: DNA
A;Residues: 743-1315 <FA2>
A;Cross-references: UNIPARC:UPI0000156CFA; GB:M12739; NID:9444920; PID:9444920; PID:9444920
A;Accession: B25194
A;Molecule type: protein
A;Residues: 865-894 <FA3>

A;Cross-references: UNIPARC:UPI000017364D
R;Matsuda, M.; Lei, D.L.; Sugimoto, N.; Ozutsumi, K.; Okabe, T.
Infect. Immun. 57, 3588-3593, 1989
A;Title: Isolation, purification, and characterization of fragment B, the NH-2-terminal
A;Reference number: A60759; MUID:90035436; PMID:2478476
A;Accession: A60759
A;Molecule type: protein
A;Residues: 461-475 <MAT>
A;Cross-references: UNIPARC:UPI000017364E
R;Demotz, S.; Lanzavecchia, L.; Eszel, U.; Niemann, H.; Widmann, C.; Corradin, G.
J. Immunol. 142, 394-402, 1989
A;Title: Delineation of several DR-restricted tetanus toxin T cell epitopes.
A;Reference number: JS0098; MUID:89093918; PMID:2463305
A;Contents: annotation; epitope region
R;Schiaivo, G.; Benfenati, F.; Foulain, B.; Rossetto, O.; de Laureto, P.P.; DasGupta, B.R.
Nature 359, 832-835, 1992
A;Title: Tetanus and botulinum-B neurotoxins block neurotransmitter release by proteolytic
A;Reference number: S27125; MUID:93063293; PMID:1331807
A;Contents: annotation
R;de Filippis, V.; Vangelista, L.; Schiaivo, G.; Tonello, F.; Montecucco, C.
Eur. J. Biochem. 229, 61-69, 1995
A;Title: Structural studies on the zinc-endopeptidase light chain of tetanus neurotoxin.
A;Reference number: S69348; MUID:95262688; PMID:7744050
A;Accession: S69348
A;Molecule type: protein
A;Residues: 2-31 <DEF>
A;Cross-references: UNIPARC:UPI000017364F
C;Comment: The source of this protein was an extrachromosomal plasmid.
C;Comment: The precursor is cleaved by endogenous proteinase activity to form light (fra-
dual chains are not toxic when separated). The amino end of the heavy chain (fragment B)
C;Comment: Fragment B forms ion channels in a lipid bilayer. Fragment C binds to ganglionic
C;Comment: This potent neurotoxin binds to peripheral neuronal synapses, is internalized
presynaptic neurons. It inhibits neurotransmitter release by proteolytic cleavage of syn-
C;Function:
A;Description: blocks neuroexocytosis via hydrolysis of a Gln-Phe peptide bond in synapt
C;Superfamily: tetanus toxin
C;Keywords: hydrolase; metalloproteinase; neurotoxin; transmembrane protein; zinc
F;2-457/Product: tetroxylisin light chain (fragment A) #status predicted <TTL>
F;461-1315/Product: tetroxylisin heavy chain (fragment B.C) #status experimental <TTH>
F;461-864/Domain: channel forming (fragment B) #status predicted <TXB>
F;865-1315/Domain: ganglioside binding (fragment C) #status predicted <TXC>
F;233,237/Binding site: zinc (His) #status predicted
F;234/Active site: Glu #status predicted

Query Match 24.2%; Score 553; DB 1; Length 1315;
Best Local Similarity 30.2%; Pred. No. 3.3e-24;
Matches 139; Conservative 92; Mismatches 151; Indels 78; Gaps 18;

Qy 19 IKDNIIDMYENKFKFIDISGNSINGDVYIY-STNRNQFGIYSKSPSEVNIAQNND 77
Db 881 LKKSITLNDINDIISDISGNSVITYPPAQLVPGINGKAIHLVNSESSEVIVHKMD 940
Qy 78 IYNGRYQNFISFWRIPIKPYFNKNL-----NNEYTIIDIRNN-----SGWKISLNYNK 129
Db 941 IEYNDMFNFVTFWLRVPK-VSASHLEQYGTNEYSIISMKHSLSGWSVSLKGN 999
Qy 130 LIWLTQDTAGNQKLVNTQWISD-----YI-NKLVFTITNRLGNSRIYINGNLD 184
Db 1000 LIWLTQDSAGEVQITTE-----DLPDKFNAYLANKWFFITIDSSANLYINGVLMG 1054
Qy 185 EKSIISNLGDIHVSDNLLFKIVGC-NDTRYVGIRYFKVPDTGLGTEIETLYSDPDPISL 243
Db 1055 SAEITGLGAIREDNNITLKLRCNNQYVSIDKRFCKALNPKIEKLYTSYLSITFL 1114
Qy 244 KDFGNLYLNYKRYLLMLLRTDKSITQNSFLN-----INQOYGYQKPNFSTRITYTG 299
Db 1115 RDFWGNPLRYTEYLYIPVASSKDV-OLKNITDYMILTNPASVYTNGLNIYYR-RLYNG 1172
Qy 300 VEVIIRKNGSTDISTDNFVKNDLAYINVDROVEYELADISTAKPEKIILIRTSNS 359
Db 1173 LKFLIKR--YTPNNEHDSFVKSQDF-----IKLY--VSYNNNEHIVGYPKQNGA 1217
Qy 360 NNSLGQIIVMDSIGNC-----TWNFNQNNNGNIGLLGFHSNN 397

Db 1218 FNNLDRIL---RVGNAPGIPLYKMEAVKLRDLTKYSVQLKLYDDKNASGLGVTHNGQ 1274
Qy 398 -----LVASSWTYNNIRKNTSSNGCFWSPISKEHGW 428
Db 1275 IGNDPNRDIILASNWFNHLKDKIL--GCDWYFVPTDEGW 1312

RESULT 15
A49777
botulinum neurotoxin type C1 precursor - Clostridium botulinum (type C, strain c-st)
C;Species: Clostridium botulinum
C;Date: 10-Mar-1994 #sequence revision 07-Apr-1994 #text_change 09-Jul-2004
A;Accession: S11291; A35396; S22166; A49777
R;Hauser, D.; Eklund, M.W.; Kurazono, H.; Binz, T.; Niemann, H.; Gall, D.M.; Boquet, P.
Nucleic Acids Res. 18, 4924, 1990
A;Title: Nucleotide sequence of Clostridium botulinum C1 neurotoxin.
A;Reference number: S11291; MUID:90370487; PMID:2204031
A;Accession: S11291
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-84, P', 86-1291 <HAU>
A;Cross-references: UNIPROT:Q93HT3; UNIPARC:UPI000016D75D; EMBL:X53751; NID:q14905; PIDN:
R;Kimura, K.; Fujii, N.; Tazuzuki, K.; Murakami, T.; Indoh, T.; Yokosawa, N.; Takeshi, K.
Biochem. Biophys. Res. Commun. 171, 1304-1311, 1990
A;Title: The complete nucleotide sequence of the gene coding for botulinum type C-1 toxin
A;Reference number: A35396; MUID:91024998; PMID:2222445
A;Accession: A35396
A;Status: preliminary; not compared with conceptual translation
A;Molecule type: DNA
A;Residues: 1-669, R', 671-1291 <TS1>
A;Cross-references: UNIPARC:UPI0000176709
R;Tazuzuki, K.; Kimura, K.; Fujii, N.; Yokosawa, N.; Oguma, K.
submitted to the EMBL Data Library, December 1991
A;Description: Nucleotide sequence of the gene for one of the components of hemagglutini
A;Reference number: S22166
A;Accession: S22166
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-1291 <TS2>
A;Cross-references: UNIPARC:UPI000003BF60; EMBL:X62389; NID:g558175; PIDN:CAA44263.1; PI
R;Kimura, K.; Fujii, N.; Tazuzuki, K.; Murakami, T.; Indoh, T.; Yokosawa, N.; Oguma, K.
Appl. Environ. Microbiol. 57, 1168-1172, 1991
A;Title: Cloning of the structural gene for Clostridium botulinum type C-1 toxin and wh
A;Reference number: A49777; MUID:91282468; PMID:2059039
A;Accession: A49777
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-607 <TS3>
A;Cross-references: UNIPARC:UPI000017670A; GB:D90210
C;Superfamily: tetanus toxin
C;Keywords: neurotoxin

Query Match 23.9%; Score 546; DB 2; Length 1291;
Best Local Similarity 31.5%; Pred. No. 8.2e-24;
Matches 146; Conservative 82; Mismatches 169; Indels 66; Gaps 16;

Qy 1 SYTNDKILILLYFNKLYKIKVDSILDMRYENKFKFIDISGNSINGDVYIYSTNENQF 60
Db 850 SYTNNSLLKDIINEYFNINDSKILLSQNRKTLVDTSGYNAEVSEEGVQLNFIFFPDF 909
Qy 61 GIYSS--KPSEVNIAQNNDIYNGRYQNFISFWRIPIKPYFNKNVNNNEYTIIDIRNN 118
Db 910 KLGSSEGRKQIVTQENIVYNSWESFISFWIRLNKWS--NLPG-YTIIDSVK-NN 965
Qy 119 SGWKISLNYNKLIWLTQDTAGNQKLVNTQWISDYSIDYINKWIFVTITNRLGNSRIYI 178
Db 966 SGWSIGIISNLFVTLTKQNEDESEQISINFSYDISNNAAGY-NKWFVFTVTNNMGMNKIYI 1024
Qy 179 NGNLIDEKSIISNLGDIHVSDNLLFKIVGCNDTRV-----GIRYKVFDTGLGKTE 229
Db 1025 NGKLIDITKVKELTGINFSTKITTEINKIPDTGLITSDSNINMWIRDFYIFAKELDGKD 1084

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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:32:07 ; Search time 221 Seconds
(without alignments)
1375.940 Million cell updates/sec

Title: US-08-981-087B-1
Perfect score: 2288
Sequence: 1 SYTNDKILLYFNKLYKKIK.....TSSNGCFWFSFKHGQEN 431

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 2166443 seqs, 705528306 residues

Total number of hits satisfying chosen parameters: 2166443

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : UniProt_05.80.*
1: uniprot_sprot.*
2: uniprot_trembl.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	2288	100.0	1278	Q57236 CLOBO	Q57236 clostridium
2	1887.5	82.5	1280	Q92AJ5 CLOBO	Q92AJ5 clostridium
3	1833	80.1	1274	1 BXP_CLOBO	P30996 clostridium
4	1827	79.9	1268	Q45851 9CLOT	Q45851 clostridium
5	1458	63.7	1251	Q9K395 CLOBO	Q9K395 clostridium
6	1457.5	63.7	1252	Q54A79 CLOBO	Q54A79 clostridium
7	1442.5	63.0	1252	Q8KZM3 CLOBO	Q8KZM3 clostridium
8	1442.5	63.0	1255	Q9PAR6 CLOBO	Q9PAR6 clostridium
9	1429	62.5	1250	1 BXE CLOBO	Q00496 clostridium
10	1426	62.3	1250	1 BXE CLOBO	P30995 clostridium
11	1120.5	49.0	1295	1 BXA1 CLOBO	P10845 clostridium
12	1120.5	49.0	1296	Q7B8V4 CLOBO	Q7B8V4 clostridium
13	1092.5	47.7	1295	1 BXA2 CLOBO	Q45894 clostridium
14	1092.5	47.7	1296	Q58GH1 CLOBO	Q58GH1 clostridium
15	1081.6	35.7	366	Q79AH9 CLOBO	Q79AH9 clostridium
16	1081.6	35.3	1291	Q8GR96 CLOBO	Q8GR96 clostridium
17	787	34.4	441	Q9X708 CLOBO	Q9X708 clostridium
18	776	34.1	1291	Q80077 CLOBO	Q80077 clostridium
19	776	33.9	1291	2 Q933K0 CLOBO	Q933K0 clostridium
20	775	33.9	1291	2 Q92AJ8 CLOBO	Q92AJ8 clostridium
21	770	33.7	1291	2 Q93G71 CLOBO	Q93G71 clostridium
22	769	33.6	1290	1 BXB CLOBO	P10844 clostridium
23	736.5	32.2	1296	1 BXB CLOBO	Q60393 clostridium
24	590.5	25.8	367	Q45861 CLOBO	Q45861 clostridium
25	590.5	25.8	1280	Q841S3 CLOBO	Q841S3 clostridium
26	588.5	25.7	1280	2 Q45849 CLOBO	Q45849 clostridium
27	588.5	25.7	1280	2 Q9LBS7 CLOBO	Q9LBS7 clostridium
28	580.5	25.4	1276	1 BXD CLOBO	P19321 clostridium
29	577.5	25.2	1275	2 Q90TG7 CBDP	Q90TG7 clostridium
30	574.5	25.1	1280	2 Q5DW55 CLOBO	Q5DW55 clostridium
31	559	24.4	451	2 Q9LA13_CLOTE	Q9LA13 clostridium

32 553 24.2 1314 1 TETX_CLOTE P04958 clostridium
33 546 23.9 1290 1 BXC1_CLOBO P18640 clostridium
34 546 23.9 1291 2 Q93HT3_CLOBO Q93HT3 clostridium
35 542 23.7 1310 2 Q93N27_CLOTE Q93N27 clostridium
36 509 22.2 1285 2 Q9LBR1_CLOBO Q9LBR1 clostridium
37 508 22.2 1285 2 Q45967_CLOBO Q45967 clostridium
38 392 17.1 77 2 Q6Q798_CLOBO Q6Q798 clostridium
39 368 16.1 361 2 Q45848_CLOBO Q45848 clostridium
40 367 16.0 361 2 Q45846_CLOBO Q45846 clostridium
41 330 14.4 77 2 Q6Q797_9CLOT Q6Q797 clostridium
42 285 12.5 1197 2 Q45888_CLOBO Q45888 clostridium
43 285.5 12.3 1198 2 Q06018_CLOBO Q06018 clostridium
44 281 12.3 1197 2 Q92AJ9_CLOBO Q92AJ9 clostridium
45 281 12.3 1197 2 P71117_CLOBO P71117 clostridium

ALIGNMENTS

RESULT 1
Q57236 CLOBO PRELIMINARY; PRT; 1278 AA.
AC Q57236 Q45863;
DT 01-NOV-1996 (TrEMBLrel. 01, Created)
DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT 01-FEB-2005 (TrEMBLrel. 29, Last annotation update)
DE BONT/F (Neurotoxin type F).
GN Name=bont/f; Synonyms=bont/F;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=NCIT 10281;
RA Hutson R.A., Collins M.D.;
RL Submitted (SEP-1994) to the EMBL/GenBank/DBJ databases.
[2]
RP NUCLEOTIDE SEQUENCE.
RA Elmore M.J., Bodsworth N.J., Whelan S.M., Minton N.P.;
RL Submitted (AUG-1994) to the EMBL/GenBank/DBJ databases.
DR EMBL; X81714; CAA57358.1; -; Genomic DNA.
DR EMBL; L35496; AAA23210.1; -; Genomic DNA.
DR PIR; S48110; S48110.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27.002; -;
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase_M27.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR Pfam; PF01742; Peptidase_M27; 1.
DR PRINTS; PR00760; BONTOLIXIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN_1.
KW Neurotoxin.
SQ SEQUENCE 1278 AA; 147073 MW; A1E1318431D6918 CRC64;

Query Match 100.0%; Score 2288; DB 2; Length 1278;
Best Local Similarity 100.0%; Pred. No. 6.9e-128;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 SYTNDKILLYFNKLYKKIKKNSILDMRYENKFKIDISGYNSISINGDVYIYSTNRQF 60
848 SYTNDKILLYFNKLYKKIKKNSILDMRYENKFKIDISGYNSISINGDVYIYSTNRQF 907
QY 61 GIYSKSPSEVNAQNNDIIYNGRYONFISFWVRIPKYNKVLNNEVTIIDCIRNNSSG 120
908 GIYSKSPSEVNAQNNDIIYNGRYONFISFWVRIPKYNKVLNNEVTIIDCIRNNSSG 967
QY 121 WKISLNKYNKIWTLTQDTAGNOKLVFNTYMTOMISISDYINKWIFVTITNNLGNRIYNG 180

RX MEDLINE=94230352; PubMed=8175689;
 RA Yamaeaki S. Baumeister A., Binz T., Blasi J., Link E., Cornille F.,
 RA Roques B., Fyke E.M., Suedhof T.C., Jahn R., Niemann H., types D and F
 RT "Cleavage of members of the synaptobrevin/VAMP family by types D and F
 RT Botulinum neurotoxins and tetanus toxin.";
 RL J. Biol. Chem. 269:12764-12772(1994).
 CC -1- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
 CC release. It binds to peripheral neuronal synapses, is internalized
 CC and moves by retrograde transport up the axon into the spinal cord
 CC where it can move between postsynaptic and presynaptic neurons. It
 CC inhibits neurotransmitter release by acting as a zinc
 CC endopeptidase that catalyzes the hydrolysis of the 58-Gln-Lys-59
 CC bond of synaptobrevins-1 and -2.
 CC -1- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
 CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
 CC detected action on small molecule substrates.
 CC -1- COFACTOR: Binds 1 zinc ion per subunit (By similarity).
 CC -1- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
 CC heavy chain (H). The light chain has the pharmacological activity,
 CC while the N- and C-terminal of the heavy chain mediate channel
 CC formation and toxin binding, respectively.
 CC -1- SUBCELLULAR LOCATION: Secreted.
 CC -1- MISCELLANEOUS: There are seven antigenically distinct forms of
 CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
 CC -1- SIMILARITY: Belongs to the peptidase M27 family.

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 CC between the Swiss Institute of Bioinformatics and the EMBL outstation
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use as long as its content is in no way modified and this statement is not
 CC removed.

 CC EMBL; M92906; AAA23263.1; -; Genomic DNA.
 CC EMBL; S73676; AAC60475.1; -; Genomic DNA.
 CC EMBL; X70820; CAA50151.1; -; Genomic DNA.
 CC EMBL; X70816; CAA50147.1; -; Genomic DNA.
 CC PIR; I40813; I40813.
 CC PIR; S48109; S48109.
 CC HSP; Q45894; IEIH.
 CC MEROPS; M27.002; -.
 CC InterPro; IPR011591; Botulinum.
 CC InterPro; IPR006025; Pept_M_Zn_BS.
 CC InterPro; IPR000395; Peptidase_M27.
 CC InterPro; IPR012928; Toxin_recept_bd_N.
 CC InterPro; IPR012500; Toxin_trans.
 CC Pfam; PF01742; Peptidase_M27; 1.
 CC Pfam; PF07953; Toxin_R_bind_N; 1.
 CC Pfam; PF07952; Toxin_trans; 1.
 CC PRINTS; PR00760; BONTOLYLIN.
 CC ProDom; PD001963; Botulinum; 1.
 CC PROSITE; PS00142; ZINC_PROTEASE; 1.
 CC Hydrolase; Metal-binding; Metalloprotease; Neurotoxin; Protease;
 CC Toxin; Transmembrane; Zinc.
 FT CHAIN 1 436 Botulinum neurotoxin F light chain.
 FT CHAIN 437 1274 Botulinum neurotoxin F heavy chain.
 FT ACT_SITE 228 228 By similarity.
 FT METAL 227 227 Zinc (catalytic) (By similarity).
 FT METAL 231 231 Zinc (catalytic) (By similarity).
 FT DISULFID 429 445 Interchain (between light and heavy
 FT chains). (Probable).
 SQ SEQUENCE 1274 AA; 146710 MW; 5B99756A/438B921 CRC64;
 Query Match 80.1%; Score 1833; DB 1; Length 1274;
 Best Local Similarity 81.3%; Pred. No. 8.9e-101;
 Matches 352; Conservative 33; Mismatches 40; Indels 8; Gaps 4;
 QY 1 SYTNDKILLYFNKLYKIKDMSILDMRYENKFFDISGYSNISINGVYIYSTNRNQF 60
 Db SYTNDKILLYFNKLYKIKDMSILDMRYENKFFDISGYSNISINGVYIYSTNRNQF 906
 QY 61 GYSSKPEVNTAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTITICIRNNNGS 120
 Db GYSSKPEVNTAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTITICIRNNNGS 966

QY 121 WKISLWYK---IITLQDTAGNOKLVNTYQTMISIDYINKWIFVTITNNLGNRIY 177
 Db WKISLWYK---IITLQDTAGNOKLVNTYQTMISIDYINKWIFVTITNNLGNRIY 1026
 QY 178 INGNLDEKISNGLDIHVSDNLFKIVGCDNTRYVYIRYFKVDFDELKTELETLYSDE 237
 Db INGNLDEKISNGLDIHVSDNLFKIVGCDNTRYVYIRYFKVDFDELKTELETLYSNE 1086
 QY 238 PDPSILKDFWGNLYLNKRYLLNLRDTSITQNSFNFLNINQORGVYQKPNIFSNTRY 297
 Db PDPSILKDFWGNLYLNKRYLLNLRDTSITQNSFNFLNINQORGVYQKPNIFSNTRY 1145
 QY 298 TGEVEIIRKNGSTDINTNFVRKNDLAYINVVDREVEIRLYADISIAKPEKIKIIRTS 357
 Db TGEVEIIRKNGSTDINTNFVRKNDLAYINVVDREVEIRLYADISIAKPEKIKIIRTS 1201
 QY 358 NSNNSLGOIIVMDSIGNCTMNFQNNNGNIGLGHSHNNLVASSWYNNIRKNTSSNGC 417
 Db NSNNSLGOIIVMDSIGNCTMNFQNNNGNIGLGHSHNNLVASSWYNNIRKNTSSNGC 1261
 QY 418 FWSFISKEHGWQE 430
 Db FWSFISKEHGWQE 1262
 RESULT 4
 Q45851_9CLOT PRELIMINARY; PRT; 1268 AA.
 AC Q45851;
 DT 01-NOV-1996 (TrEMBLrel. 01, Created)
 DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
 DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
 DE Neurotoxin type F.
 GN Name:bont /f;
 OS Clostridium baratii.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.
 OC NCBI_TaxID=1561;
 RN [1]
 RP NUCLEOTIDE SEQUENCE.
 RX MEDLINE=93252228; PubMed=8486245; DOI=10.1016/0378-1097(93)90581-L;
 RA Thompson D.E., Hutson R.A., East A.K., Allaway D., Collins M.D.,
 RA Richardson P.T.;
 RA "Nucleotide sequence of the gene coding for Clostridium baratii type F
 RT neurotoxin: comparison with other clostridial neurotoxins.";
 RL FEMS Microbiol. Lett. 108:175-182(1993).
 DR EMBL; X68262; CAA48329.1; -; Genomic DNA.
 DR PIR; S33411; S33411.
 DR HSP; Q45894; IEIH.
 DR MEROPS; M27.002; -.
 DR GO; GO:0016021; C:integral to membrane; IEA.
 DR GO; GO:0008237; F:metallopeptidase activity; IEA.
 DR GO; GO:0009405; P:pathogenesis; IEA.
 DR GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
 DR InterPro; IPR011591; Botulinum.
 DR InterPro; IPR000395; Peptidase_M27.
 DR InterPro; IPR006025; Pept_M_Zn_BS.
 DR Pfam; PF01742; Peptidase_M27; 1.
 DR PRINTS; PR00760; BONTOLYLIN.
 DR ProDom; PD001963; Botulinum; 1.
 DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN_1.
 KW Neurotoxin.
 SQ SEQUENCE 1268 AA; 145512 MW; 963040091AC15ED2 CRC64;
 Query Match 79.9%; Score 1827; DB 2; Length 1268;
 Best Local Similarity 78.8%; Pred. No. 2e-100;
 Matches 338; Conservative 38; Mismatches 53; Indels 0; Gaps 0;

QY 2 YTNDKILLYFNKLYKIKDMSILDMRYENKFFDISGYSNISINGVYIYSTNRNQF 61
 Db YTNDKILLYFNKLYKIKDMSILDMRYENKFFDISGYSNISINGVYIYSTNRNQF 899

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QY 62 IYSSKPEVNAQNNDIYNGRYQNFISFWVRIPKYNKVLNMEYTIIDCIRNNNSGW 121
Db 900 IYSSRLSEVNTQNTTIYNSRYQNFISFWVRIPKYNKVLNMEYTIIDCIRNNNSGW 959
QY 122 KISLNYNKKIITWLODTAGNOKLVNTQMTISIDYINKWIFVTITNRLGNSRIYNGN 181
Db 960 KISLNYNKKIITWLODTAGNOKLVNTQMTISIDYINKWIFVTITNRLGNSRIYNGN 1019
QY 182 LIDKESISNLGDIHVSNDILFKIVGNCNDRYVGRYKFKVDTLKGTEIETLYSDEPDPS 241
Db 1020 LTOQKSLINLGNHVDNDILFKIVGNCNDRYVGRYKFKVDTLKGTEIETLYSDEPDPS 1079
QY 242 ILKDFWGNLYLLYKRYKRYLLNLLRTDKSITQNSNPLNINQOQGVYQKPNFISNTRLYTGE 301
Db 1080 ILKDFWGNLYLLYKRYKRYLLNLLRPMSVTNKSILNINRQGIYSKINIFSNARLYTGE 1139
QY 302 VIIRKNGSTDISNTDNFVRKNDLAYINVDVDRVEYRLYADISTAKPKIKLIRTSNSNN 361
Db 1140 VIIRKNGSTDISNTDNFVRKNDLAYINVDVDRVEYRLYADISTAKPKIKLIRTSNSNY 1199
QY 362 SLGQIIVMDSIGNCTMNFONNGNIGLLGFHNSNLVASSWYNNIRKNTSSNGCFWSP 421
Db 1200 NSQMIIMDSIGNCTMNFONNGNIGLLGFHNSNLVASSWYNNIRKNTSSNGCFWSP 1259
QY 422 ISKEHGWOE 430
Db 1260 ISKEHGWOE 1268

RESULT 5
ID Q9K395_CLOBOU PRELIMINARY; PRT; 1251 AA.
AC Q9K395;
DT 01-OCT-2000 (TrEMBLrel. 15, Created)
DT 01-OCT-2000 (TrEMBLrel. 15, Last sequence update)
DT 01-FEB-2005 (TrEMBLrel. 29, Last annotation update)
DE Type E botulinum toxin.
GN Names=bont/E;
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=LCL 095, LCL 155, KZ 1899, KZ 1897, KZ 1898, KZ 1886, KZ 1887, KZ 1889, KZ 1890, KZ 1891, and LCL 063;
RX MEDLINE=20509829; PubMed=11055954;
RX DOI=10.1128/AEM.66.11.4992-4997.2000;
RA Wang X., Maegawa T., Karasawa T., Kozaki S., Tsukamoto K., Gyobu Y., Yamakawa K., Oguma K., Sakaguchi Y., Nakamura S.;
RT "Genetic analysis of type E botulinum toxin-producing Clostridium butyricum strains.";
RL Appl. Environ. Microbiol. 66:4992-4997(2000).
DR EMBL; AB037714; BAB03522.1; -; Genomic_DNA.
DR EMBL; AB037704; BAB03512.1; -; Genomic_DNA.
DR EMBL; AB037705; BAB03513.1; -; Genomic_DNA.
DR EMBL; AB037706; BAB03514.1; -; Genomic_DNA.
DR EMBL; AB037710; BAB03518.1; -; Genomic_DNA.
DR EMBL; AB037712; BAB03520.1; -; Genomic_DNA.
DR EMBL; AB037713; BAB03521.1; -; Genomic_DNA.
DR EMBL; AB037711; BAB03519.1; -; Genomic_DNA.
DR EMBL; AB037709; BAB03517.1; -; Genomic_DNA.
DR EMBL; AB037708; BAB03516.1; -; Genomic_DNA.
DR EMBL; AB037707; BAB03515.1; -; Genomic_DNA.
DR HSSP; Q45894; 1ELH.
DR SNR; Q9K395; 2-412.
DR GO; GO:0008233; F:peptidase activity; IEA.
DR GO; GO:0009405; P:pathogenesis; IEA.
DR GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR006025; Pept M.Zn.BS.
DR InterPro; IPR000395; Peptidase_M27.
DR InterPro; IPR012928; Toxin_recpt_bd_N.

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DR InterPro; IPR012500; Toxin_trans.
DR Pfam; PF01742; Peptidase_M27; 1.
DR Pfam; PF07953; Toxin_R_bind_N; 1.
DR Pfam; PF07952; Toxin_trans; 1.
DR PRINTS; PR00760; BONTOXILYSIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
SQ SEQUENCE 1251 AA; 143752 MW; 2021F4E427070296 CRC64;

Query Match 63.7%; Score 1458; DB 2; Length 1251;
Best Local Similarity 62.7%; Pred. No. 1.9e-78;
Matches 271; Conservative 75; Mismatches 74; Indels 12; Gaps 5;

QY 1 SYTNDKILILYFNKLYKKIKDMSILDMRYENKFKIDISGVGNSISNGDVYIYSTNRNQF 60
Db 829 SYTDDKILISYFNKFKRIKSSVLNRYNDKYDVTSGYDSNININGIFIIYPTNRNQF 888
QY 61 GYSSKPEVNAQNNDIYNGRYQNFISFWVRIPKYNKVLNMEYTIIDCIRNNNS 119
Db 889 TIFNSKPEVNIQNDYIIVDNKYKNFISFWVRIPYDNKIVNINNEYTIINCMDNNS 948
QY 120 GWKISLNYNKKIITWLODTAGNOKLVNTQMTISIDYINKWIFVTITNRLGNSRIYIN 179
Db 949 GWKVSLSNHNHIIITWLODNARINQKLVFKYGNANGISDYINKWIFVTITNDRLGSKLYIN 1008
QY 180 GNLIDKESISNLGDIHVSNDILFKIVGNCNDRYVGRYKFKVDTLKGTEIETLYSDEPD 239
Db 1009 GHLIDQKSLINLGNHVDNDILFKIVGNCNDRYVGRYKFKVDTLKGTEIETLYSDEPD 1068
QY 240 PSILKDFWGNLYLLYKRYKRYLLNLLRTDKSI-TQNSNPLNINQOQGVYQKPNFISNTRLYT 298
Db 1069 TNLKDFWGNLYLLYKRYKRYLLNLLRPMSVTNKSILNINRQGIYSKINIFSNARLYT 1123
QY 299 GYEVIIRKNGSTDISNTDNFVRKNDLAYINVDVDRVEYRLYADISTAKPKIKLIRTSN 358
Db 1124 GIKVKIQR--VNDSTNDRFVRKNDQVYINYSNSSSYLYADTNTDKEKTIK---SSS 1178
QY 359 SNNSLQGIIVMDSIGNCTMNFONNGNIGLLGFHNSNLVASSWYNNIRKNTSSNGCF 418
Db 1179 SGNRFQVVMVMSVGNCTMNFONNGNIGLLGFKADIVVASTWYIYTHRDHTNSNGCF 1238
QY 419 WSPFISKEHGWOE 430
Db 1239 WNFISEHGWOE 1250

RESULT 6
ID Q54A79_CLOBO PRELIMINARY; PRT; 1252 AA.
AC Q54A79;
DT 13-SEP-2005 (TrEMBLrel. 31, Created)
DT 13-SEP-2005 (TrEMBLrel. 31, Last sequence update)
DT 13-SEP-2005 (TrEMBLrel. 31, Last annotation update)
DE Botulinum neurotoxin type E.
GN Name=bont/E;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=35396;
RA Tsukamoto K., Mukamoto M., Kohda T., Ihara H., Wang X., Maegawa T., Nakamura S., Karasawa T., Kozaki S.;
RT "Sequence of the botulinum neurotoxin type E.";
RL Submitted (MAR-2002) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB082519; BAB86845.1; -; Genomic_DNA.
DR Neurotoxin.
SQ SEQUENCE 1252 AA; 143637 MW; 76401D4D2E95D7A2 CRC64;

Query Match 63.7%; Score 1457.5; DB 2; Length 1252;
Best Local Similarity 63.4%; Pred. No. 2.1e-78;
Matches 276; Conservative 72; Mismatches 70; Indels 17; Gaps 7;

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QY 1 SYTDKILILYFNKLYKKIKONSLDMRYENKFKIDISGYGNSISINGDVYIYSTRNQF 60
DB 829 SYTDDKILISYFNKFFKRIKSSVLNMYKNDKVDTSYDGSNININGDVYKPTNKQF 888
QY 61 GIYSSKPESEVNIQAONDIINYGRYQNFISFWVRIPKYPNK-VNLNNEYTIIDCIRNNNS 119
DB 889 GIYNDKLSSEVNISQNDIINYDKYKNFISFWVRIPYNDKIVVNNVEYTIINCMDRNS 948
QY 120 GWKISLNYNKIITLQDTAGNNOKLAFNYGNGANGISDIYINKWIFVTITNRLGDSKLYIN 179
DB 949 GWKVSLSNHEIITLQDNGINGNOKLAFNYGNGANGISDIYINKWIFVTITNRLGDSKLYIN 1008
QY 180 GNLIDKSIISNLGDIHVSNDILFKIVGNCNDRYVIGIRYFKVFDTELKTEIETLYSDEPD 239
DB 1009 GNLIDKSIISNLGDIHVSNDILFKIVGNCNDRYVIGIRYFKVFDTELKTEIETLYSNEPN 1068
QY 240 PSILKDFWGNLYLLKRYLLNLRDKSI-TQNSFNINQOQGVVYKQNFISNTRLYT 298
DB 1069 TNLKDFWGNLYLLKRYLLNLRDKSI-TQNSFNINQOQGVVYKQNFISNTRLYT 1123
QY 299 GVEVIRK--NGSTDISTDNFVRKNDLAYIN-VVDRDVEYRLYADISIAKPEKIILIR 355
DB 1124 GIKVKIORVNSSTN----DNLVRKNDQVYINFAVASKTHLLPPLVADTATTNKERTIKI-- 1177
QY 356 TSNSNLSGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNVLVASSWYNNIRKNTSSN 415
DB 1178 -SSGNRFNQVVMNSVGNCTMNFQNNNGNIGLLGFHSHNVLVASSWYNNIRKNTSSN 1236
QY 416 GCFWFSFISKEHGWQE 430
DB 1237 GCFWFSFISKEHGWQE 1251

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RESULT 7

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Q8KZM3 CLOBU
ID Q8KZM3 CLOBU PRELIMINARY; PRT; 1252 AA.
AC Q8KZM3
DT 01-OCT-2002 (TrEMBLrel. 22, Created)
DT 01-OCT-2002 (TrEMBLrel. 22, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Type E botulinum toxin.
GN Name=bont/E;
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=BL 5262;
RA Tsukamoto K., Mukamoto M., Kohda T., Ihara H., Wang X., Maegawa T.,
RA Nakamura S., Karasawa T., Kozaki S.;
RL Submitted (JUL-2002) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB088207; BAC05434.1; -; Genomic_DNA.
DR HSSP; Q45894; 1E1H.
DR SMR; Q8KZM3; 2-412.
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR000395; Peptidase_M27.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR Pfam; PF01742; Peptidase_M27; 1.
DR PRINTS; PR00760; BONTOTOXILYSIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
DR SEQUENCE 1252 AA; 143510 MW; 41B633BB744D3B41 CRC64;

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Query Match 63.0%; Score 1442.5; DB 2; Length 1252;
 Best Local Similarity 63.0%; Pred. No. 1.6e-77;
 Matches 274; Conservative 73; Mismatches 71; Indels 17; Gaps 7;

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QY 1 SYTDKILILYFNKLYKKIKONSLDMRYENKFKIDISGYGNSISINGDVYIYSTRNQF 60
DB 829 SYTDDKILISYFNKFFKRIKSSVLNMYKNDKVDTSYDGSNININGDVYKPTNKQF 888
QY 61 GIYSSKPESEVNIQAONDIINYGRYQNFISFWVRIPKYPNK-VNLNNEYTIIDCIRNNNS 119
DB 889 GIYNDKLSSEVNISQNDIINYDKYKNFISFWVRIPYNDKIVVNNVEYTIINCMDRNS 948
QY 120 GWKISLNYNKIITLQDTAGNNOKLAFNYGNGANGISDIYINKWIFVTITNRLGDSKLYIN 179
DB 949 GWKVSLSNHEIITLQDNGINGNOKLAFNYGNGANGISDIYINKWIFVTITNRLGDSKLYIN 1008
QY 180 GNLIDKSIISNLGDIHVSNDILFKIVGNCNDRYVIGIRYFKVFDTELKTEIETLYSDEPD 239
DB 1009 GNLIDKSIISNLGDIHVSNDILFKIVGNCNDRYVIGIRYFKVFDTELKTEIETLYSNEPN 1068
QY 240 PSILKDFWGNLYLLKRYLLNLRDKSI-TQNSFNINQOQGVVYKQNFISNTRLYT 298
DB 1069 TNLKDFWGNLYLLKRYLLNLRDKSI-TQNSFNINQOQGVVYKQNFISNTRLYT 1123
QY 299 GVEVIRK--NGSTDISTDNFVRKNDLAYIN-VVDRDVEYRLYADISIAKPEKIILIR 355
DB 1124 GIKVKIORVNSSTN----DNLVRKNDQVYINFAVASKTHLLPPLVADTATTNKERTIKI-- 1177
QY 356 TSNSNLSGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNVLVASSWYNNIRKNTSSN 415
DB 1178 -SSGNRFNQVVMNSVGNCTMNFQNNNGNIGLLGFHSHNVLVASSWYNNIRKNTSSN 1236
QY 416 GCFWFSFISKEHGWQE 430
DB 1237 GCFWFSFISKEHGWQE 1251

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RESULT 8

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Q9FAR6 CLOBU
ID Q9FAR6 CLOBU PRELIMINARY; PRT; 1255 AA.
AC Q9FAR6
DT 01-MAR-2001 (TrEMBLrel. 16, Created)
DT 01-MAR-2001 (TrEMBLrel. 16, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Type E botulinum toxin.
GN Name=bont/E;
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=BL 6340/ATCC 43755/BL 5520/KZ 147;
RX MEDLINE=20509829; PubMed=11055954;
RX DOI=10.1128/AEM.66.11.4992-4997.2000;
RA Wang X., Maegawa T., Karasawa T., Kozaki S., Tsukamoto K., Gyobu Y.,
RA Yamakawa K., Oguma K., Sakaguchi Y., Nakamura S.;
RT "Genetic analysis of type E botulinum toxin-producing Clostridium
RT butyricum strains.";
RL Appl. Environ. Microbiol. 66:4992-4997(2000).
DR EMBL; AB039264; BAB12249.1; -; Genomic_DNA.
DR HSSP; Q45894; 1E1H.
DR SMR; Q9FAR6; 5-415.
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR001591; Botulinum.
DR InterPro; IPR000395; Peptidase_M27.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR Pfam; PF01742; Peptidase_M27; 1.
DR PRINTS; PR00760; BONTOTOXILYSIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
DR SEQUENCE 1255 AA; 143917 MW; 1B557B9D85CD8E4D CRC64;

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Query Match 63.0%; Score 1442.5; DB 2; Length 1255;


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DR InterPro; IPR006025; Pept M Zn BS.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR012928; Toxin recpt_bd_N.
DR InterPro; IPR012500; Toxin trans.
DR Pfam; PF01742; Peptidase M27; 1.
DR Pfam; PF07953; Toxin R_bind_N; 1.
DR Pfam; PF07952; Toxin trans; 1.
DR PRINTS; PR00760; BONTOLYLIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; 1.
KW 3D-structure; Direct protein sequencing; Hydrolase; Metal-binding;
KW Metalloprotease; Neurotoxin; Protease; Toxin; Transmembrane; Zinc.
FT INIT MET 0
FT CHAIN 1 421 Botulinum neurotoxin E light chain.
FT CHAIN 422 1250 Botulinum neurotoxin E heavy chain.
FT ACT_SITE 212 212 By similarity.
FT METAL 211 211 Zinc (catalytic) (By similarity).
FT METAL 215 215 Zinc (catalytic) (By similarity).
FT DISULFID 411 425 Interchain (between light and heavy chains) (Probable).
FT CONFLICT 176 176 R -> G (in Ref. 2).
FT CONFLICT 197 197 C -> S (in Ref. 2 and 3).
FT CONFLICT 339 339 R -> A (in Ref. 2).
FT CONFLICT 772 772 I -> L (in Ref. 2 and 6).
FT CONFLICT 962 963 FE -> LQ (in Ref. 2 and 6).
FT CONFLICT 966 966 R -> A (in Ref. 2 and 6).
FT CONFLICT 1194 1194 N -> NN (in Ref. 2).
FT SEQUENCE 1250 AA; 143713 MW; D9FC26DDA041EB4 CRC64;
Query Match 62.5%; Score 1429; DB 1; Length 1250;
Best Local Similarity 62.5%; Pred. No. 1e-76;
Matches 272; Conservative 73; Mismatches 72; Indels 18; Gaps 8;
QY 1 SYTDKILLYPNKLYKKIKNSILDMRYENKFKIDISGYNSISNGDVIYSTNRQF 60
DB 828 SYTDKILLYPNKLYKKIKNSILDMRYENKFKIDISGYNSISNGDVIYSTNRQF 887
QY 61 GYSSKPEVNIAQNDIYNGRYQNFESISFWVRIPKYPNK-VLNNEVTTIDICRNNS 119
DB 888 GYSSKPEVNIAQNDIYNGRYQNFESISFWVRIPKYPNK-VLNNEVTTIDICRNNS 947
QY 120 GWKISLNYKIITLQDTAGNOKLVFNVTQMSISDYINKWIFVTIINRLGNSRIYN 179
DB 948 GWKISLNYKIITLQDTAGNOKLVFNVTQMSISDYINKWIFVTIINRLGNSRIYN 1007
QY 180 GNLIDKSIINLGNHVSNDILFKVNCSTYRIGRYFNIPIKELDEITQLYSNEPN 239
DB 1008 GNLIDKSIINLGNHVSNDILFKVNCSTYRIGRYFNIPIKELDEITQLYSNEPN 1067
QY 240 PSILKDFWGNLYLLNRYLLNLLRTDKSI-TQNSFLNINQORGVYQKPNIFSNRLYT 298
DB 1068 PSILKDFWGNLYLLNRYLLNLLRTDKSI-TQNSFLNINQORGVYQKPNIFSNRLYT 1122
QY 299 GVEVIIRK--NGSTDISNTDFNRKNDLAYIN-VVDRDVEYRLYADISIAKPEKILKIR 355
DB 1123 GVEVIIRK--NGSTDISNTDFNRKNDLAYIN-VVDRDVEYRLYADISIAKPEKILKIR 1176
QY 356 TSNNSNLQIIIVMSIGNKNTWTFQNNNGNIGLGFHNSNLVASSWYNNIRKNTGSN 415
DB 1177 TSNNSNLQIIIVMSIGNKNTWTFQNNNGNIGLGFHNSNLVASSWYNNIRKNTGSN 1234
QY 416 GCFWFSFISKEHGQOE 430
DB 1235 GCFWFSFISKEHGQOE 1249
RESULT 10
BXE_CLOBU STANDARD; PRT; 1250 AA.
AC P30995;
DT 01-JUL-1993 (Rel. 26, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
```

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DE DE Botulinum neurotoxin type E precursor (EC 3.4.24.69) (BONT/E)
DE DE (Bontoxylisin E) [Contains: Botulinum neurotoxin E light chain;
DE DE Botulinum neurotoxin E heavy chain].
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RP STRAIN=ATCC 43181, and ATCC 43755;
RX MEDLINE=92181428; PubMed=1543481;
RA Poulet S., Hauser D., Quanz M., Niemann H., Popoff M.R.;
RT "Sequences of the botulinum neurotoxin E derived from Clostridium
RT botulinum type E (strain Beluga) and Clostridium butyricum (strains
RT ATCC 43181 and ATCC 43755).";
RL Biochem. Biophys. Res. Commun. 183:107-113(1992).
RN [2]
RP NUCLEOTIDE SEQUENCE OF 1-251.
RP STRAIN=BL6340;
RX MEDLINE=91237316; PubMed=2033376;
RA Fujii N., Kimura K., Murakami T., Indoh T., Tezuka K., Yokosawa N.,
RA Yaehiki T., Ogura K.;
RT "Cloning of a DNA fragment encoding the 5'-terminus of the botulinum
RT type E toxin gene from Clostridium butyricum strain BL6340.";
RL J. Gen. Microbiol. 137:519-525(1991).
RN [3]
RP PROTEIN SEQUENCE OF 1-48.
RP STRAIN=5362;
RA Gmenez J., Foley J., Dasgupta B.R.;
RT "Neurotoxin type E from Clostridium botulinum and C. butyricum;
RT partial sequence and comparison.";
RL FASEB J. 2:A1750-A1750(1988).
CC -!- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
CC release. It binds to peripheral neuronal synapses, is internalized
CC and moves by retrograde transport up the axon into the spinal cord
CC where it can move between postsynaptic and presynaptic neurons. It
CC inhibits neurotransmitter release by acting as a zinc
CC endopeptidase.
CC -!- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -!- COFACTOR: Binds 1 zinc ion per subunit (By similarity).
CC -!- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H). The light chain has the pharmacological activity,
CC while the N- and C-terminal of the heavy chain mediate channel
CC formation and toxin binding, respectively.
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
CC -!- SIMILARITY: Belongs to the peptidase M27 family.
CC -----
CC This Swiss-Prot entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation
CC the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.
CC -----
DR EMBL; X62088; CAA43998.1; -; Genomic_DNA.
DR EMBL; X53180; CAA37321.1; -; Genomic_DNA.
DR PIR; JH0256; JH0256.
DR HSSP; O45894; 1E1H.
DR SMR; P30995; 1-411.
DR MEROPS; M27.002; -.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR006025; Pept M Zn BS.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR012928; Toxin recpt_bd_N.
DR InterPro; IPR012500; Toxin trans.
DR Pfam; PF01742; Peptidase M27; 1.
DR Pfam; PF07953; Toxin R_bind_N; 1.
DR Pfam; PF07952; Toxin trans; 1.
DR PRINTS; PR00760; BONTOLYLIN.
DR PRODOM; PD001963; Botulinum; 1.
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DR PROSITE; PS00142; ZINC_PROTEASE; 1.
KW Direct protein sequencing; Hydrolase; Metal-binding; Metalloprotease;
KW Neurotoxin; Protease; Toxin; Transmembrane; Zinc.
FT INIT_MET 0
FT CHAIN 1 421 Botulinum neurotoxin E light chain.
FT CHAIN 422 1250 Botulinum neurotoxin E heavy chain.
FT ACT_SITE 212 212 By similarity.
FT METAL 211 211 Zinc (catalytic) (By similarity).
FT METAL 215 215 Zinc (catalytic) (By similarity).
FT DISULFID 411 425 Interchain (between light and heavy chains) (Probable).
FT CONFLICT 229 229 K -> M (in Ref. 2).
SQ SEQUENCE 1250 AA; 143266 MW; 8171B5B2C312857 CRC64;

Query Match 62.3%; Score 1426; DB 1; Length 1250;
Best Local Similarity 62.8%; Pred. No. 1.5e-76;
Matches 273; Conservative 73; Mismatches 71; Indels 18; Gaps 8;

QY 1 SYTNDKILILVFNKLYKKIKDNLDMRYENKFKIDISGYGSNISINGDVVYSTNRNQF 60
DB 828 SYTDKILISVFNKFKRIKSSVNNRYKNDKVIDTSGVDSNININGDVYKFTNKNQF 887

QY 61 GIYSKPEVNIAQNDDIIVNGRYQNFISFWRIPKYPNK-VNLNNEYTIIDCIRNNNS 119
DB 888 GIYNDKLSVNNISQNDVIYDNYKYNFSISFWVRIPNYDKIVNVNNEYTIINCMRDNS 947

QY 120 GWKLSINYKNIITWLOTAGNQKLVFNQYQMISIDYINKWIFVTITNRLGNSRIYIN 179
DB 948 GWKYSLNHNEIITWLOTAGNSGINKLAFNYGNANGISDYINKWIFVTITNRLGDSKLIYIN 1007

QY 180 GNLIDKSIISNLGDIHVSNDILPKIVGNDTRYGVIRYKVPDTELKTEIETLYSDPD 239
DB 1008 GNLIDKSIISNLGDIHVSNDILPKIVGNDTRYGVIRYKVPDTELKTEIETLYSDPD 1067

QY 240 PSILKDFWGNLYLLKRYKYLNLRLTDRKSIQNS-NFLNINQQRGVYKPKNIFSNTRLYT 298
DB 1068 ANILKDFWGNLYLLKRYKYLNLRLTDRKSIQNS-NFLNINQQRGVYKPKNIFSNTRLYT 1122

QY 299 GVEVIRK--NGSTDISNTDNFVRKNDLAYIN-VDRDVEYRLYADISIAKPEKIILIR 355
DB 1123 GIKYKIQRVNNSSTN----DNLVRKNDQVYVNFVASKTHLLPLVYADATTNKEKTIKI-- 1176

QY 356 TSNNNSLGIQIIVMDSIGNCTNMVFNQNGNIGLLGFHSHNLVASSWYNNIRKNTSSN 415
DB 1177 -SSGNGRFQVVNVNSVG-NCTMMFKNNGNIGLLGFKADTVVASTWYTHMRDNTNSN 1234

QY 416 GCFWSPISKEHGWE 430
DB 1235 GFFWNFISEHGWE 1249

RESULT 11
ID _BXA1_CLOBO STANDARD; PRT; 1295 AA.
AC P10845; P01561; P18639;
DT 01-JUL-1989 (Rel. 11, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DE Botulinum neurotoxin type A precursor (EC 3.4.24.69) (BONT/A)
DE (Bontoxilysin A) (BOTOX) [Contains: Botulinum neurotoxin A light-chain; Botulinum neurotoxin A heavy-chain].
GN Name: botA; Synonyms: atx, bna;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
[1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / NCTC 2016;
RA MEDLINE=90235864; PubMed=2185020;
RA Thompson D.E., Brehm J.K., Oultram J.D., Swinfield T.-J., Shone C.C.,
RA Atkinson T., Melling J., Minton N.P.;
RA "The complete amino acid sequence of the Clostridium botulinum type A
RT
```

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RT neurotoxin, deduced by nucleotide sequence analysis of the encoding
RT gene.";
RL Eur. J. Biochem. 189:73-81(1990).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / 62A;
RX MEDLINE=90264400; PubMed=2160960;
RA Binz T., Kurazono H., Wille M., Frevert J., Wernars K., Niemann H.;
RT "The complete sequence of botulinum neurotoxin type A and comparison
RT with other clostridial neurotoxins.";
RL J. Biol. Chem. 265:9153-9158(1990).
RN [3]
RP NUCLEOTIDE SEQUENCE OF 1-65.
RC STRAIN=Type A / 62A;
RX MEDLINE=97016817; PubMed=8863443;
RA East A.K., Bhandari M., Stacey J.M., Campbell K.D., Collins M.D.;
RT "Organization and phylogenetic interrelationships of genes encoding
RT components of the botulinum toxin complex in proteolytic Clostridium
RT botulinum types A, B, and F: evidence of chimeric sequences in the
RT gene encoding the nontoxic nonhemagglutinin component.";
RL Int. J. Syst. Bacteriol. 46:1105-1112(1996).
RN [4]
RP NUCLEOTIDE SEQUENCE OF 1-34.
RC STRAIN=Type A / Hall;
RX MEDLINE=89350959; PubMed=2669749;
RA Batley M.J., Somers E., Dasgupta B.R.;
RT "Characterization of botulinum type A neurotoxin gene: delineation of
RT the N-terminal encoding region.";
RL Biochem. Biophys. Res. Commun. 162:1388-1395(1989).
RN [5]
RP NUCLEOTIDE SEQUENCE OF 1-18.
RC STRAIN=Type A / NH;
RX MEDLINE=96096783; PubMed=8521962; DOI=10.1016/0014-5793(95)01241-5;
RA Fujita R., Fujinaga Y., Inoue K., Nakajima H., Kumon H., Oguma K.;
RT "Molecular characterization of two forms of nontoxic-nonhemagglutinin
RT components of Clostridium botulinum type A progenitor toxins.";
RL FEBS Lett. 376:41-44(1995).
RN [6]
RP PROTEIN SEQUENCE OF 1-16.
RX MEDLINE=84178501; PubMed=6370252;
RA Schmidt J.J., Sartymoorthy V., Dasgupta B.R.;
RT "Partial amino acid sequence of the heavy and light chains of
RT botulinum neurotoxin type A.";
RL Biochem. Biophys. Res. Commun. 119:900-904(1984).
RN [7]
RP PROTEIN SEQUENCE OF 1-46.
RA Dasgupta B.R., Foley J., Niece R.;
RT "Partial sequence of the light chain of botulinum neurotoxin type A.";
RL Biochemistry 26:4162-4162(1987).
RN [8]
RP PROTEIN SEQUENCE OF 1-5 AND 444-456.
RX MEDLINE=91120847; PubMed=2126206; DOI=10.1016/0300-9084(90)90048-L;
RA Dasgupta B.R., Dekleva M.L.;
RT "Botulinum neurotoxin type A: sequence of amino acids at the N-terminus and around the nicking site.";
RL Biochimie 72:661-664(1990).
RN [9]
RP PROTEIN SEQUENCE OF 448-474 AND 872-895.
RX MEDLINE=89024662; PubMed=3178218;
RA Sathymoorthy V., Dasgupta B.R., Foley J., Niece R.L.;
RT "Botulinum neurotoxin type A: cleavage of the heavy chain into two
RT halves and their partial sequences.";
RL Arch. Biochem. Biophys. 266:142-151(1988).
RN [10]
RP PROTEIN SEQUENCE OF 448-482.
RX MEDLINE=85285016; PubMed=3896784;
RA Shone C.C., Hambleton P., Melling J.;
RT "Inactivation of Clostridium botulinum type A neurotoxin by trypsin
RT and purification of two tryptic fragments. Proteolytic action near the
RT COOH-terminus of the heavy subunit destroys toxin-binding activity.";
RL Eur. J. Biochem. 151:75-82(1985).
RN [11]
RP PROTEIN SEQUENCE OF 866-879 AND 1147-1218.
```

RX PubMed=8397793;
 RA Gineez J.A., Dasgupta B.R.;
 RT "Botulinum type A neurotoxin digested with pepsin yields 132, 97, 72,
 RL 45, 42, and 18 kD fragments.";
 RN J. Protein Chem. 12:351-363(1993).
 RP [12]
 RP IDENTIFICATION OF SUBSTRATE.
 RX MEDLINE=94063091; PubMed=8243676; DOI=10.1016/0014-5793(93)80448-4;
 RA Schiavo G., Santucci A., Dasgupta B.R., Mehta P.P., Jontes J.,
 RA Benfenati F., Wilson M.C., Montecucco C.;
 RT "Botulinum neurotoxins serotypes A and E cleave SNAP-25 at distinct
 RL COOH-terminal peptide bonds.";
 RN FEBS Lett. 335:99-103(1993).
 RP [13]
 RP IDENTIFICATION OF SUBSTRATE.
 RX MEDLINE=94124495; PubMed=8294407;
 RA Binz T., Blaszi J., Yamasaki S., Baumeister A., Link E., Suedhof T.C.,
 RA Jahn R., Niemann H.;
 RT "Proteolysis of SNAP-25 by types E and A botulinum neurotoxins.";
 RL J. Biol. Chem. 269:1617-1620(1994).
 RP [14]
 RP MUTAGENESIS OF GLU-261; PHE-265 AND TYR-365.
 RX MEDLINE=21556941; PubMed=11700044; DOI=10.1006/bbrc.2001.5911;
 RA Rignoni M., Caccin P., Johnson E.A., Montecucco C., Rossetto O.;
 RT "Site-directed mutagenesis identifies active-site residues of the
 RL light chain of botulinum neurotoxin type A.";
 RN Biochem. Biophys. Res. Commun. 288:1231-1237(2001).
 RP [15]
 RP X-RAY CRYSTALLOGRAPHY (3.3 ANGSTROMS).
 RX MEDLINE=98455071; PubMed=9783750;
 RA Lacy D.B., Tepp W., Cohen A.C., Dasgupta B.R., Stevens R.C.;
 RT "Crystal structure of botulinum neurotoxin type A and implications for
 RL toxicity.";
 RN Nat. Struct. Biol. 5:898-902(1998).
 CC -!- FUNCTION: Inhibits acetylcholine release. The botulinum toxin
 CC binds with high affinity to peripheral neuronal presynaptic
 CC membrane, is then internalized by receptor-mediated endocytosis.
 CC The C-terminus of the heavy chain (H) is responsible for the
 CC adherence of the toxin to the cell surface while the N-terminus
 CC mediates transport of the light chain from the endocytic vesicle
 CC to the cytosol. After translocation, the light chain (L)
 CC hydrolyzes the 197-Gln-1-Arg-198 bond in SNAP-25, thereby blocking
 CC neurotransmitter release. Inhibition of acetylcholine release
 CC results in flaccid paralysis, with frequent heart or respiratory
 CC failure.
 CC -!- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
 CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
 CC detected action on small molecule substrates.
 CC -!- COFACTOR: Binds 1 zinc ion per subunit.
 CC -!- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
 CC heavy chain (H).
 CC -!- SUBCELLULAR LOCATION: Secreted.
 CC -!- PHARMACEUTICAL: Available under the name BOTOX (Allergan) for the
 CC treatment of strabismus and blepharospasm associated with dystonia
 CC and cervical dystonia. Also used for the treatment of hemifacial
 CC spasm and a number of other neurological disorders characterized
 CC by abnormal muscle contraction.
 CC -!- MISCELLANEOUS: There are seven antigenically distinct forms of
 CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
 CC -!- SIMILARITY: Belongs to the peptidase M27 family.
 CC -!- DATABASE: NAME=BOTOX product information web site;
 CC WWW="http://www.botox.com/site/".
 CC -!- DATABASE: NAME=Protein Spotlight; NOTE=Issue 19 of February 2002;
 CC WWW="http://www.expasy.org/spotlight/back issues/spot019.shtml".
 CC -!- This Swiss-Prot entry is copyright. It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use as long as its content is in no way modified and this statement is not
 CC removed.
 CC -----
 DR EMBL; X52066; CAA36289.1; -; Genomic DNA.
 DR EMBL; M30196; AAA23262.1; -; Genomic DNA.

RESULT 12

Q7B8V4_CLOBO	Q7B8V4_CLOBO PRELIMINARY; PRT; 1296 AA.	Q45894; P77780;	AC
ID	Q7B8V4	28-FEB-2003 (Rel. 41, Created)	DT
AD	Q7B8V4	28-FEB-2003 (Rel. 41, Last sequence update)	DT
DT	10-MAY-2005 (TrEMBLrel. 30, Created)	13-SEP-2005 (Rel. 48, Last annotation update)	DT
DT	10-MAY-2005 (TrEMBLrel. 30, Last sequence update)	Botulinum neurotoxin type A precursor (EC 3.4.24.69) (BoNT/A)	DE
DT	10-MAY-2005 (TrEMBLrel. 30, Last annotation update)	(Bontoxilysin A) (BOTOX) [Contains: Botulinum neurotoxin A light-chain; Botulinum neurotoxin A heavy-chain].	DE
DE	BoNT/A (Neurotoxin BoNT)	Name=BoNTA; Synonyms=atx, bna;	GN
GN	Name=bont/a;	Clostridium botulinum.	OS
OS	Clostridium botulinum.	Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;	OC
OC	Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;	Clostridium.	OC
OC	Clostridium.	NCBI_TaxID=1491;	OX
OX	NCBI_TaxID=1491;	[1]	RN
RN	[1]	NUCLEOTIDE SEQUENCE	RP
RP	NUCLEOTIDE SEQUENCE	STRAIN=Type A / Kyoto-F;	RC
RC	STRAIN=Allergan-Hall A;	MEDLINE=94143603; PubMed=8310180; DOI=10.1016/0923-2508(93)90004-L;	RX
RX	MEDLINE=22919384; PubMed=14557061; DOI=10.1016/S0378-1119(03)00792-3;	Willms A., East A.K., Lawson P.A., Collins M.D.;	RA
RA	Zhang L., Lin W.J., Li S., Aoki K.R.;	"Sequence of the gene coding for the neurotoxin of Clostridium	RT
RT	"Complete DNA sequences of the botulinum neurotoxin complex of	botulinum type A associated with infant botulism: comparison with	RT
RT	Clostridium botulinum type A-Hall (Allergan) strain.";	other clostridial neurotoxins.";	RT
RL	Gene 315:21-32(2003).	Res. Microbiol. 144:547-556(1993).	RL
RL	EMBL; AF461540; AA075961.1; -; Genomic DNA.	[2]	RN
DR	EMBL; AF461540; AA075961.1; -; Genomic DNA.	NUCLEOTIDE SEQUENCE OF 1-65.	RP
KW	Neurotoxin.	STRAIN=Type A / Kyoto-F;	RC
QY	SEQUENCE 1296 AA; 149425 MW; DE8CF2754AE43B6 CRC64;	MEDLINE=97016817; PubMed=8863443;	RX
		East A.K., Bhandari M., Stacey J.M., Campbell K.D., Collins M.D.;	RA
		"organization and phylogenetic interrelationships of genes encoding	RT
		components of the botulinum toxin complex in proteolytic Clostridium	RT
		botulinum types A, B, and F: evidence of chimeric sequences in the	RT
		gene encoding the nontoxic nonhemagglutinin component.";	RT
		Int. J. Syst. Bacteriol. 46:1105-1112(1996).	RL
		-I- FUNCTION: Inhibits acetylcholine release. The botulinum toxin	CC
		binds with high affinity to peripheral neuronal presynaptic	CC
		membrane, is then internalized by receptor-mediated endocytosis.	CC
		The C-terminus of the heavy chain (H) is responsible for the	CC
		adherence of the toxin to the cell surface while the N-terminus	CC
		mediates transport of the light chain from the endocytic vesicle	CC
		to the cytosol. After translocation, the light chain (L)	CC
		hydrolyzes the 197-Gln- -Arg-198 bond in SNAP-25, thereby blocking	CC
		neurotransmitter release. Inhibition of acetylcholine release	CC
		results in flaccid paralysis, with frequent heart or respiratory	CC
		failure (By similarity).	CC
		-I- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the	CC
		neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No	CC
		detected action on small molecule substrates.	CC
		-I- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a	CC
		heavy chain (H) (By similarity).	CC
		-I- SUBCELLULAR LOCATION: Secreted.	CC
		-I- MISCELLANEOUS: There are seven antigenically distinct forms of	CC
		botulinum neurotoxin: Types A, B, Cl, D, E, F, and G.	CC
		-I- SIMILARITY: Belongs to the peptidase M27 family.	CC
		-----	CC
		This Swiss-Prot entry is copyright. It is produced through a collaboration	CC
		between the Swiss Institute of Bioinformatics and the EMBL Outstation -	CC
		the European Bioinformatics Institute. There are no restrictions on its	CC
		use as long as its content is in no way modified and this statement is not	CC
		removed.	CC
		-----	CC
		EMBL; X73423; CAA51824.1; -; Genomic DNA.	DR
		EMBL; X87974; CAA61234.1; -; Genomic DNA.	DR
		PIR; I40645; I40645.	DR
		PDB; 1E1H; X-ray; A/C-9-249, B/D=250-415.	DR
		MEROPS; M27.002; -.	DR
		InterPro; IPR011591; Botulinum.	DR
		InterPro; IPR006025; Pept M. Zn BS.	DR
		InterPro; IPR000395; Peptidase M27.	DR
		InterPro; IPR012928; Toxin recpt bd_N.	DR
		InterPro; IPR012500; Toxin trans.	DR
		Pfam; PF01742; Peptidase M27; 1.	DR
		Pfam; PF07953; Toxin_R_bind_N; 1.	DR
		Pfam; PF07952; Toxin trans; 1.	DR
		PRINTS; PR00760; BONTOKILYSIN.	DR
		ProDom; PD001963; Botulinum; 1.	DR

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ID	Q7B8V4	28-FEB-2003 (Rel. 41, Created)	DT
AD	Q7B8V4	28-FEB-2003 (Rel. 41, Last sequence update)	DT
DT	10-MAY-2005 (TrEMBLrel. 30, Created)	13-SEP-2005 (Rel. 48, Last annotation update)	DT
DT	10-MAY-2005 (TrEMBLrel. 30, Last sequence update)	Botulinum neurotoxin type A precursor (EC 3.4.24.69) (BoNT/A)	DE
DT	10-MAY-2005 (TrEMBLrel. 30, Last annotation update)	(Bontoxilysin A) (BOTOX) [Contains: Botulinum neurotoxin A light-chain; Botulinum neurotoxin A heavy-chain].	DE
DE	BoNT/A (Neurotoxin BoNT)	Name=BoNTA; Synonyms=atx, bna;	GN
GN	Name=bont/a;	Clostridium botulinum.	OS
OS	Clostridium botulinum.	Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;	OC
OC	Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;	Clostridium.	OC
OC	Clostridium.	NCBI_TaxID=1491;	OX
OX	NCBI_TaxID=1491;	[1]	RN
RN	[1]	NUCLEOTIDE SEQUENCE	RP
RP	NUCLEOTIDE SEQUENCE	STRAIN=Type A / Kyoto-F;	RC
RC	STRAIN=Allergan-Hall A;	MEDLINE=94143603; PubMed=8310180; DOI=10.1016/0923-2508(93)90004-L;	RX
RX	MEDLINE=22919384; PubMed=14557061; DOI=10.1016/S0378-1119(03)00792-3;	Willms A., East A.K., Lawson P.A., Collins M.D.;	RA
RA	Zhang L., Lin W.J., Li S., Aoki K.R.;	"Sequence of the gene coding for the neurotoxin of Clostridium	RT
RT	"Complete DNA sequences of the botulinum neurotoxin complex of	botulinum type A associated with infant botulism: comparison with	RT
RT	Clostridium botulinum type A-Hall (Allergan) strain.";	other clostridial neurotoxins.";	RT
RL	Gene 315:21-32(2003).	Res. Microbiol. 144:547-556(1993).	RL
RL	EMBL; AF461540; AA075961.1; -; Genomic DNA.	[2]	RN
DR	EMBL; AF461540; AA075961.1; -; Genomic DNA.	NUCLEOTIDE SEQUENCE OF 1-65.	RP
KW	Neurotoxin.	STRAIN=Type A / Kyoto-F;	RC
QY	SEQUENCE 1296 AA; 149425 MW; DE8CF2754AE43B6 CRC64;	MEDLINE=97016817; PubMed=8863443;	RX
		East A.K., Bhandari M., Stacey J.M., Campbell K.D., Collins M.D.;	RA
		"organization and phylogenetic interrelationships of genes encoding	RT
		components of the botulinum toxin complex in proteolytic Clostridium	RT
		botulinum types A, B, and F: evidence of chimeric sequences in the	RT
		gene encoding the nontoxic nonhemagglutinin component.";	RT
		Int. J. Syst. Bacteriol. 46:1105-1112(1996).	RL
		-I- FUNCTION: Inhibits acetylcholine release. The botulinum toxin	CC
		binds with high affinity to peripheral neuronal presynaptic	CC
		membrane, is then internalized by receptor-mediated endocytosis.	CC
		The C-terminus of the heavy chain (H) is responsible for the	CC
		adherence of the toxin to the cell surface while the N-terminus	CC
		mediates transport of the light chain from the endocytic vesicle	CC
		to the cytosol. After translocation, the light chain (L)	CC
		hydrolyzes the 197-Gln- -Arg-198 bond in SNAP-25, thereby blocking	CC
		neurotransmitter release. Inhibition of acetylcholine release	CC
		results in flaccid paralysis, with frequent heart or respiratory	CC
		failure (By similarity).	CC
		-I- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the	CC
		neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No	CC
		detected action on small molecule substrates.	CC
		-I- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a	CC
		heavy chain (H) (By similarity).	CC
		-I- SUBCELLULAR LOCATION: Secreted.	CC
		-I- MISCELLANEOUS: There are seven antigenically distinct forms of	CC
		botulinum neurotoxin: Types A, B, Cl, D, E, F, and G.	CC
		-I- SIMILARITY: Belongs to the peptidase M27 family.	CC
		-----	CC
		This Swiss-Prot entry is copyright. It is produced through a collaboration	CC
		between the Swiss Institute of Bioinformatics and the EMBL Outstation -	CC
		the European Bioinformatics Institute. There are no restrictions on its	CC
		use as long as its content is in no way modified and this statement is not	CC
		removed.	CC
		-----	CC
		EMBL; X73423; CAA51824.1; -; Genomic DNA.	DR
		EMBL; X87974; CAA61234.1; -; Genomic DNA.	DR
		PIR; I40645; I40645.	DR
		PDB; 1E1H; X-ray; A/C-9-249, B/D=250-415.	DR
		MEROPS; M27.002; -.	DR
		InterPro; IPR011591; Botulinum.	DR
		InterPro; IPR006025; Pept M. Zn BS.	DR
		InterPro; IPR000395; Peptidase M27.	DR
		InterPro; IPR012928; Toxin recpt bd_N.	DR
		InterPro; IPR012500; Toxin trans.	DR
		Pfam; PF01742; Peptidase M27; 1.	DR
		Pfam; PF07953; Toxin_R_bind_N; 1.	DR
		Pfam; PF07952; Toxin trans; 1.	DR
		PRINTS; PR00760; BONTOKILYSIN.	DR
		ProDom; PD001963; Botulinum; 1.	DR

RESULT 13
BXA2_CLOBO
ID_BXA2_CLOBO

DR PROSITE; PS00142; ZINC_PROTEASE; FALSE_NEG.
 KW 3D-structure; Hydrolase; Metal-binding; Metalloprotease; Neurotoxin;
 KW Procetase; Toxin; Transmembrane; zinc.
 FT INIT_MET 0 0 By similarity.
 FT CHAIN 1 447 Botulinum neurotoxin A light-chain.
 FT CHAIN 448 1295 Botulinum neurotoxin A heavy-chain.
 FT TRANSMEM 626 646 Potential.
 FT TRANSMEM 655 675 Potential.
 FT ACT_SITE 223 223 By similarity.
 FT METAL 222 222 Zinc (catalytic) (By similarity).
 FT METAL 226 226 Zinc (catalytic) (By similarity).
 FT DISULFID 429 453 Interchain (between light and heavy chains) (By similarity).
 FT DISULFID 1234 1279 By similarity.
 FT SEQUENCE 1295 AA; 149280 MW; 5DA04A13D98D6372 CRC64;
 Query Match 47.7%; Score 1092.5; DB 1; Length 1295;
 Best Local Similarity 48.6%; Pred. No. 1.2e-56;
 Matches 216; Conservative 76; Mismatches 133; Indels 19; Gaps 7;
 QY 2 YTNDKILLILYFNKLYKKIKDNLDMRYENKFKTIDISGYSNLSINGDVYIYNRQFG 61
 DB 855 YVDNKKLLSTETIKYIKNIVNTSILSVYKDDLDLSRYGAKINIGRVDYVYDSIDKQIK 914
 QY 62 IYSSKPSVNTIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNNSGW 121
 DB 915 LINESSTIEVLKNAIVNSMYENFSTFWIKPKYFSKLNNEYTIINCL-ENNSGW 973
 QY 122 KISLNKIIITWLODTAGNNQKLVFNYYTQMISIDYINKWIFVTITNNRLGNSRIYINGN 181
 DB 974 KVSLEYGEIITWLODNKQNIQRVVFYSQVMNISDYINRWIFVTITNNRLTKSKIYINGR 1033
 QY 182 LIDEKSIENLGDHIVSDNLFKIVGCDN-TRYVGIRYKVPDTGLKTEIETLSDEPDP 240
 DB 1034 LIDOKPISNLGNIHASNKIMFKLDGCRDPRRYIMIKYFNLFDEKELNEKEIKDLYDSQNS 1093
 QY 241 SILKDFGNLYLYNKRYYLLNLRDTKSIQNS----NFLNINQORGVYQKPNIFSNTRL 296
 DB 1094 GILKDFGNLYQYDKPYTLMNLFDPNKYVDVNNIGIRGYMYLKGRGVSVTNLYLSTL 1153
 QY 297 YTGVEVIIRKNGSTDISNTDNFVRKNDLAYINNVDRDVEYRLYADISIAKPEIKILRT 356
 DB 1154 YEGTKFIKKYAS---GNEDNIVRNDRVYINVVKNKEYRLATNASQAGVEKILSALEI 1210
 QY 357 SNSNLSLGOIIVMDS-----IGNCTMNFQNNNGNIGLLGFHSNN----LVASSWYNN 407
 DB 1211 PDVGN-LSQVVMKSKDDQGIIRNCKMNLQDNNGNDIGFPHLYDNIATKLVASNNYNRQ 1269
 QY 408 IRKNTSSNGCFWFSFISKEHGWQEN 431
 DB 1270 VGKASRTFGCSWEFIPVDDGWGES 1293

RESULT 14
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 AC Q58GH1;
 DT 10-MAY-2005 (Tremblrel. 30, Created)
 DT 10-MAY-2005 (Tremblrel. 30, Last sequence update)
 DT 10-MAY-2005 (Tremblrel. 30, Last annotation update)
 DE Type A2 botulinum neurotoxin.
 OS Clostridium botulinum.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.
 OX NCBI_TaxID=1491;
 RN NUCLEOTIDE SEQUENCE.
 RP STRAIN=PRI-H1A2;
 RA Johnson E.A., Tepp W.H., Bradshaw M., Gilbert R.J., Cook P.E.,
 RT "Characterization of Clostridium botulinum Strains Associated with an
 Infant Botulism Case in the United Kingdom."
 RL J. Clin. Microbiol. 0:0-0(2005).

RN NUCLEOTIDE SEQUENCE.
 RP STRAIN=PRI-H1A2;
 RA Smith T.J., Lou J., Geren I., Forsyth C., Tsai R., Tepp W.H.,
 RA Bradshaw M., Johnson E.A., Smith L.A., Marks J.D.;
 RT "Sequence variation within botulinum neurotoxin serotypes impacts
 RT antibody binding and neutralization."
 RL Submitted (MAR-2005) to the EMBL/GenBank/DBJ databases.
 DR EMBL; AY953275; AAX53156.1; -; Genomic_DNA.
 KW Neurotoxin.
 SQ SEQUENCE 1296 AA; 149410 MW; 6F12E7BF28ED69D1 CRC64;
 Query Match 47.7%; Score 1092.5; DB 2; Length 1296;
 Best Local Similarity 48.6%; Pred. No. 1.2e-56;
 Matches 216; Conservative 76; Mismatches 133; Indels 19; Gaps 7;
 QY 2 YTNDKILLILYFNKLYKKIKDNLDMRYENKFKTIDISGYSNLSINGDVYIYNRQFG 61
 DB 856 YVDNKKLLSTETIKYIKNIVNTSILSVYKDDLDLSRYGAKINIGRVDYVYDSIDKQIK 915
 QY 62 IYSSKPSVNTIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNNSGW 121
 DB 916 LINESSTIEVLKNAIVNSMYENFSTFWIKPKYFSKLNNEYTIINCL-ENNSGW 974
 QY 122 KISLNKIIITWLODTAGNNQKLVFNYYTQMISIDYINKWIFVTITNNRLGNSRIYINGN 181
 DB 975 KVSLEYGEIITWLODNKQNIQRVVFYSQVMNISDYINRWIFVTITNNRLTKSKIYINGR 1034
 QY 182 LIDEKSIENLGDHIVSDNLFKIVGCDN-TRYVGIRYKVPDTGLKTEIETLSDEPDP 240
 DB 1035 LIDOKPISNLGNIHASNKIMFKLDGCRDPRRYIMIKYFNLFDEKELNEKEIKDLYDSQNS 1094
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 DB 1095 GILKDFGNLYQYDKPYTLMNLFDPNKYVDVNNIGIRGYMYLKGRGVSVTNLYLSTL 1154
 QY 297 YTGVEVIIRKNGSTDISNTDNFVRKNDLAYINNVDRDVEYRLYADISIAKPEIKILRT 356
 DB 1155 YEGTKFIKKYAS---GNEDNIVRNDRVYINVVKNKEYRLATNASQAGVEKILSALEI 1211
 QY 357 SNSNLSLGOIIVMDS-----IGNCTMNFQNNNGNIGLLGFHSNN----LVASSWYNN 407
 DB 1212 PDVGN-LSQVVMKSKDDQGIIRNCKMNLQDNNGNDIGFPHLYDNIATKLVASNNYNRQ 1270
 QY 408 IRKNTSSNGCFWFSFISKEHGWQEN 431
 DB 1271 VGKASRTFGCSWEFIPVDDGWGES 1294
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 AC Q79AH9;
 DT 05-JUL-2004 (Tremblrel. 27, Created)
 DT 05-JUL-2004 (Tremblrel. 27, Last sequence update)
 DT 05-JUL-2004 (Tremblrel. 27, Last annotation update)
 DE Botulinum neurotoxin type F (Fragment).
 GN Name=BoNT/F;
 OS Clostridium botulinum.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.
 OX NCBI_TaxID=1491;
 RN NUCLEOTIDE SEQUENCE.
 RP STRAIN=type F;
 RC MEDLINE=94013372; PubMed=8408542;
 RA Campbell K.D., Collins M.D., East A.K.;
 RT "Gene probes for identification of the botulinum neurotoxin gene and
 RT specific identification of neurotoxin types B, E, and F."
 RL J. Clin. Microbiol. 31:2255-2262(1993).
 RN NUCLEOTIDE SEQUENCE.
 RP STRAIN=type F;

RA Campbell K.D.;
 RL Submitted (JAN-1993) to the EMBL/GenBank/DBJ databases.
 DR EMBL; X70821; CAA50152.1; -; Genomic_DNA.
 DR HSP; P04958; IA8D.
 DR GO; GO:0009405; P:pathogenesis; IEA.
 KW Neurotoxin.
 FT NON_TER 1
 FT NON_TER 366
 SQ SEQUENCE 366 AA; 43136 MW; 45A132B235D7E640 CRC64;

Query Match 35.7%; Score 816; DB 2; Length 366;
 Best Local Similarity 100.0%; Pred. No. 8.3e-41;
 Matches 153; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Qy	61	GIYSKSPSEVNIAQNNDIIYNGRYQNFSPFWRIPIKYNKVLNNEYTIIDCIRNNNSG	120
Db	274	GIYSKSPSEVNIAQNNDIIYNGRYQNFSPFWRIPIKYNKVLNNEYTIIDCIRNNNSG	333
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 Job time : 224 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:46:47 ; Search time 53 Seconds
(without alignments)
672.325 Million cell updates/sec

Title: US-08-981-087B-1
Perfect score: 2288
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Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 572060 seqs, 82675679 residues

Total number of hits satisfying chosen parameters: 572060

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

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2: /cgn2_6/ptodata/1/1aa/6 COMB.pep:*
3: /cgn2_6/ptodata/1/1aa/H COMB.pep:*
4: /cgn2_6/ptodata/1/1aa/ECTUS COMB.pep:*
5: /cgn2_6/ptodata/1/1aa/RE COMB.pep:*
6: /cgn2_6/ptodata/1/1aa/backfiles1.pep:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

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2	1120.5	49.0	1296	1	US-08-405-496A-28
3	1120.5	49.0	1296	2	US-08-915-136-28
4	1120.5	49.0	1296	2	US-09-084-517-28
5	1113.5	48.7	438	1	US-08-480-604A-23
6	1113.5	48.7	438	1	US-08-405-496A-23
7	1113.5	48.7	438	2	US-08-915-136-23
8	1113.5	48.7	438	2	US-09-084-517-23
9	1113.5	48.7	462	1	US-08-480-604A-26
10	1113.5	48.7	462	1	US-08-405-496A-26
11	1113.5	48.7	462	2	US-08-915-136-26
12	1113.5	48.7	462	2	US-09-084-517-26
13	1092.5	47.7	848	2	US-10-360-101-219
14	1019.5	44.6	382	2	US-09-288-326A-9
15	1019.5	44.6	382	2	US-09-548-409B-9
16	769.5	33.6	1290	2	US-10-360-101-220
17	676.5	29.6	1169	2	US-09-255-829-20
18	556	24.3	452	1	US-07-618-312A-2
19	556	24.3	452	1	US-08-280-228-2
20	553	24.2	452	1	US-07-618-312A-4
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22	553	24.2	618	1	US-08-868-381A-5
23	553	24.2	853	2	US-08-913-880C-17
24	553	24.2	858	2	US-08-913-880C-16
25	553	24.2	860	2	US-08-913-880C-15
26	553	24.2	862	2	US-08-913-880C-14
27	553	24.2	865	2	US-08-913-880C-13

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30	553	24.2	875	2	US-08-913-880C-10
31	553	24.2	1315	2	US-08-913-880C-1
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33	281.5	12.3	141	2	US-09-465-276-1
34	277.5	12.1	140	2	US-08-446-114A-22
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36	151.5	6.6	2184	2	US-09-134-001C-2993
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44	143	6.2	1004	2	US-09-206-942-57
45					

ALIGNMENTS

RESULT 1
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; Sequence 28, Application US/08480604A
; Patent No. 5736139
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND PREVENTION OF C. DIFFICILE DISEASE
; TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/480,604A
; FILING DATE: 07-JUN-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/422,711
; FILING DATE: 14-APR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027

Sequence 12, Appl
Sequence 11, Appl
Sequence 10, Appl
Sequence 1, Appl
Sequence 8, Appl
Sequence 1, Appl
Sequence 22, Appl
Sequence 8, Appl
Sequence 6, Appl
Sequence 2993, Ap
Sequence 6, Appl
Sequence 6, Appl
Sequence 6, Appl
Sequence 6, Appl
Sequence 20, Appl
Sequence 57, Appl


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APPLICANT: FIRCA, JOSEPH R.
APPLICANT: STAFFORD, DOUGLAS C.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 32
CORRESPONDENCE ADDRESS:
ADDRESS: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/915,136
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/480,604
FILING DATE:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/405,496
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01763
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 28:
SEQUENCE CHARACTERISTICS:
LENGTH: 1296 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-915-136-28

Query Match 49.0%; Score 1120.5; DB 2; Length 1296;
Best Local Similarity 49.4%; Pred. No. 9.7e-83;
Matches 219; Conservative 78; Mismatches 127; Indels 19; Gaps 7;

QY 2 YTNKILLYFNKLYKIKONSLDMRYNNKPFIDISGYGNSISGVDVYIYSTNRNQF 61
DB 856 YVNDQKLTFTTEYIKNIINTSLNLRYESNHLIDLSRVASKINIGSKVNFDPIDKNOIQ 915
QY 62 IYSSKPEVNIQNDIINYGRYQNFISFWIRPKYFNKNLNNEYTTIIDCIRNNNSGW 121
DB 916 LFNLESSKIEVLKNAIVNMYENFSTFWIRPKYFNSISLNNEYTTIINCW-ENNSGW 974
QY 122 KSLNKNKIWTQDTAGNKNQKLVFNQYQWISDYNKWIPTIITNNLGNRIYNGN 181
DB 975 KVSINYEIITLQDTQEIQRVYFYSQMINISDYINRWIFVTIITNNLNKSIYNGR 1034
QY 182 LIDEKISINIGDTHVSDNLFKLVGNDT-RYVGIRYFKVFDTELKTEIETLYSDPDP 240
DB 1035 LIDQKPIISNIGNIHASNNIMFKLDGCDRTHRYIWIYFNLFDEKELKEIKLDYQNS 1094

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241 SILKDFWAGNYLLYKRYLLNLRTRDKSITONS-----NFLNINQORGVYQKPNFNTRL 296
1095 GILKDFWGYLDYKQFYMLNLYDPNKYVDVNNVGIRGYMLKPGPRGSVMTTNIYLNSSL 1154
297 YTGVEVLIIRKNGSTDISNTDNFVRKNDLAVINVVDRDVEYRLYADISIAKPEKIIKLRT 356
1155 YRGTKFIIRKIYAS---GNKNIVRNNDRVINVVKNKEYRLATNVSQAGVEKILSALEI 1211
357 SNSNNSLGIIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN-----LVASSWYNN 407
1212 PDVGN-LSQVVMKSKNDQGITNKCKMNLQDNGNDIGFIFGHQFNNAIKLVASNNWYNRQ 1270
408 IRKNTSSNGCFWFSFISKEHQWE 430
1271 IERSRRTLGCSWBFIPVDDGWE 1293

RESULT 4
US-09-084-517-28
Sequence 28, Application US/09084517
Patent No. 6613329
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 30
CORRESPONDENCE ADDRESS:
ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/084,517
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: CARROLL, PETER G.
REGISTRATION NUMBER: 32,837
REFERENCE/DOCKET NUMBER: OPHD-01610
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 28:
SEQUENCE CHARACTERISTICS:
LENGTH: 1296 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-09-084-517-28

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;; CORRESPONDENCE ADDRESS:
;; ADDRESSEE: MEDLEN & CARROLL, LLP
;; STREET: 220 MONTGOMERY STREET, SUITE 2200
;; CITY: SAN FRANCISCO
;; STATE: CALIFORNIA
;; COUNTRY: USA
;; ZIP: 94104
;;
;; COMPUTER READABLE FORM:
;; MEDIUM TYPE: Floppy disk
;; COMPUTER: IBM PC compatible
;; OPERATING SYSTEM: PC-DOS/MS-DOS
;; SOFTWARE: Patent In Release #1.0, Version #1.30
;; CURRENT APPLICATION DATA:
;; APPLICATION NUMBER: US/08/405,496A
;; FILING DATE: 16-MAR-1995
;; CLASSIFICATION: 424
;;
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 08/329,154
;; FILING DATE: 25-OCT-1994
;;
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 08/161,907
;; FILING DATE: 02-DEC-1993
;;
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 07/985,321
;; FILING DATE: 04-DEC-1992
;;
;; PRIOR APPLICATION DATA:
;; APPLICATION NUMBER: US 07/429,791
;; FILING DATE: 31-OCT-1989
;;
;; ATTORNEY/AGENT INFORMATION:
;; NAME: INGOLIA, DIANE E.
;; REGISTRATION NUMBER: 40,027
;; REFERENCE/DOCKET NUMBER: OPHD-01308
;; TELECOMMUNICATION INFORMATION:
;; TELEPHONE: (415) 705-8410
;; TELEFAX: (415) 397-8338
;; INFORMATION FOR SEQ ID NO: 23:
;; SEQUENCE CHARACTERISTICS:
;; LENGTH: 438 amino acids
;; TYPE: amino acid
;; TOPOLOGY: linear
;; MOLECULE TYPE: protein
;; US-08-405-496A-23

Query Match 48.7%; Score 1113.5; DB 1; Length 438;
Best Local Similarity 49.9%; Pred. No. 8.5e-83;
Matches 218; Conservative 75; Mismatches 125; Indels 19; Gaps 7;

QY 8 LILYFNKLYKKIKONSLDMRYENKFKIDISGYSNISINGDVYIYSTNRNQFGIYSSKP 67
DB 4 LLSTFTEYKNTINTSILNRLYESNHLIDLSRYASKINIGSKVNFDPIDKQIQLFNLES 63

QY 68 SEWNTAQNNDIYNGRYQNFSTSFWRIPKYPKNVNLNEYTIIDICRNNNSGKISLNY 127
DB 64 SKIEVLKQALVYNSVNFSTSFWRIPKYPKNVNLNEYTIIDICRNNNSGKISLNY 122

QY 128 NKIITLQTAGNQKLVNYTQMSISDYINKWIFVITNNRLGNSRIYINGNLIDKES 187
DB 123 GEIITLQTBQIKQVWFYSQMINISDYINRWIFVITNNRLGNSRIYINGNLIDKQP 182

QY 188 ISNLGDHVSNDILPKIVGCDNT-RYVGIRYKVFDETLGKTEIETLYSDPDPSILKDF 246
DB 183 ISNLGNHASNIMFKLDCRTHRYIWKYNFLDKELNEKEIKLDYDNQNSGILKDF 242

QY 247 WGNLYLLNRYLLNLLRTDKSITQNS----NPLNINQORGVYQKPNFSTNRLTYGVGV 302
DB 243 WGDYLYQDPYPMNLNLDYDKYVDVNNVGIKGRGVMYKLVNLSNLSYRGTKF 302

QY 303 IIRKNGSTDISNTDNFVRQNDLAYINVDVDVEYRLYADISAKPEKIKLRTSNNS 362
DB 303 IIRKVAS---GNKNDIVRNNDRYINIVVYKNKEYRLATNASQGVKEILSALEIPDVGN- 358

QY 363 LQGIIVWDS-----IGNCTMTAFQNNNGNIGLGFHSNN-----LVASSWYNNIRKNTS 413

Db 359 LSOVVVWKSNDQGITNKKCKQNLQNDNNDIGFIGHFQFNIAKLVASWYNQRIESSR 418
QY 414 SNGCFWFSFKSRHGWOE 430
DB 419 TLGCSWEFIPVDDGWE 435

RESULT 7
US-08-915-136-23
; Sequence 23, Application US/08915136
; Patent No. 6290960
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/915,136
; FILING DATE:
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/480,604
; FILING DATE:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01763
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 23:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 438 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-915-136-23

Query Match 48.7%; Score 1113.5; DB 2; Length 438;
Best Local Similarity 49.9%; Pred. No. 8.5e-83;
Matches 218; Conservative 75; Mismatches 125; Indels 19; Gaps 7;

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Qy 8 LILYFNKLYKKIKONSIIDMYENKFKIDISGYSNISINGDVYIYSTNRNQFIYSSKP 67
Db 4 LLSTFTYIKNIINTSILNRYESNHLIDLRYASKINIGSKVNFDPIDKNQIQLFNLES 63
Qy 68 SEVNIQAQNDIYNGRYQNFISFWVRIPKYFNKVLNNEYTIIDCIRNNNSGWKISLNY 127
Db 64 SKIEVILKNAIVNSMYENFSTFWIRIPKYFNSISLNEYTIINCW-ENNSGWKISLNY 122
Qy 128 NKIITWLODTAGNKKLVNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKS 187
Db 123 GEIITWLODQOEIKQVRVVKYQMSINISDYINRWIFVTITNNRLNNSKIYINGRLIDQKP 182
Qy 188 ISNLGDHVSNDILFKIVGNDT-RYVGIRYKVFDTLGTETETIETIYSDEPDSILKDF 246
Db 183 ISNLGNTHASNNIMFKLDGCRDTHRYIWKYFNLFDKELNEKEIKDLYDNQNSGILKDF 242
Qy 247 WGNLYLNKRYLLNLLRLTDSITONS-----NFLNINQORGVYQKPNIFSNTRYLTGVEV 302
Db 243 WGDYLOVDKPYMLNLYDPNKYVDVNVNNGIRGYMYLKGPRGSVMTTNIYLNSSLYRGTKF 302
Qy 303 IIRKNGSTDISNTDNFVRKNDLAYINVDVRDVEYRLYADISIAPKEIKIIRTSNNS 362
Db 303 IIRKNGSTDISNTDNFVRKNDLAYINVDVRDVEYRLYADISIAPKEIKIIRTSNNS 362
Qy 363 LGQIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN-----LVASSWYNNIRKNTS 413
Db 359 LSQVVMKSKNDQGITNKKCNLQDNGNDIGFPHQFNNAIKLVASWYNNIRKNTS 418
Qy 414 SNGCFWSFISKEHGWQE 430
Db 419 TLGCSWEFIPVDDGWGE 435

RESULT 8
US-09-084-517-23
; Sequence 23, Application US/09084517
; Patent No. 6613329
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: HAVERTOCK, MEDLEN & CARROLL,
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/09/084,517
; FILING DATE:
; CLASSIFICATION:
; PRIORITY APPLICATION DATA:
; APPLICATION NUMBER: US 08/
; FILING DATE: 16-MAR-1995
; PRIORITY APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIORITY APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIORITY APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIORITY APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
```

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; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: CARROLL, PETER G.
; REGISTRATION NUMBER: 32,837
; REFERENCE/DOCKET NUMBER: OPD-01610
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 23:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 438 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-09-084-517-23

Query Match 48.7%; Score 1113.5; DB 2; Length 438;
Best Local Similarity 49.9%; Pred. No. 8.5e-83;
Matches 218; Conservative 75; Mismatches 125; Indels 19; Gaps 7;

Qy 8 LILYFNKLYKKIKONSIIDMYENKFKIDISGYSNISINGDVYIYSTNRNQFIYSSKP 67
Db 4 LLSTFTYIKNIINTSILNRYESNHLIDLRYASKINIGSKVNFDPIDKNQIQLFNLES 63
Qy 68 SEVNIQAQNDIYNGRYQNFISFWVRIPKYFNKVLNNEYTIIDCIRNNNSGWKISLNY 127
Db 64 SKIEVILKNAIVNSMYENFSTFWIRIPKYFNSISLNEYTIINCW-ENNSGWKISLNY 122
Qy 128 NKIITWLODTAGNKKLVNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKS 187
Db 123 GEIITWLODQOEIKQVRVVKYQMSINISDYINRWIFVTITNNRLNNSKIYINGRLIDQKP 182
Qy 188 ISNLGDHVSNDILFKIVGNDT-RYVGIRYKVFDTLGTETETIETIYSDEPDSILKDF 246
Db 183 ISNLGNTHASNNIMFKLDGCRDTHRYIWKYFNLFDKELNEKEIKDLYDNQNSGILKDF 242
Qy 247 WGNLYLNKRYLLNLLRLTDSITONS-----NFLNINQORGVYQKPNIFSNTRYLTGVEV 302
Db 243 WGDYLOVDKPYMLNLYDPNKYVDVNVNNGIRGYMYLKGPRGSVMTTNIYLNSSLYRGTKF 302
Qy 303 IIRKNGSTDISNTDNFVRKNDLAYINVDVRDVEYRLYADISIAPKEIKIIRTSNNS 362
Db 303 IIRKNGSTDISNTDNFVRKNDLAYINVDVRDVEYRLYADISIAPKEIKIIRTSNNS 362
Qy 363 LGQIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN-----LVASSWYNNIRKNTS 413
Db 359 LSQVVMKSKNDQGITNKKCNLQDNGNDIGFPHQFNNAIKLVASWYNNIRKNTS 418
Qy 414 SNGCFWSFISKEHGWQE 430
Db 419 TLGCSWEFIPVDDGWGE 435

RESULT 9
US-08-480-604A-26
; Sequence 26, Application US/08480604A
; Patent No. 5736139
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHAYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
```

COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/480,604A
FILING DATE: 07-JUN-1995
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/422,711
FILING DATE: 14-APR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/405,496
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01763
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 26:
SEQUENCE CHARACTERISTICS:
LENGTH: 462 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-480-604A-26

Query Match 48.7%; Score 1113.5; DB 1; Length 462;
Best Local Similarity 49.9%; Pred. NO. 9.2e-83;
Matches 218; Conservative 75; Mismatches 125; Indels 19; Gaps 7;
QY 8 LILYFNKLYKKIKONSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQFGIYSSKP 67
DB 28 LLSTTEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQIFNLES 87
QY 68 SEVNIAQNNDIYNGRYQNFSTFWIRIPKYNKVLNNEYTIIDCIRNNNSGKISLNY 127
DB 88 SKIEVLKNAIVNMYENFSTFWIRIPKYNFNSISLNEYTIINCM-ENNSGKVS LNY 146
QY 128 NKIIWTLODTAGNKKLVFNVTQMSISDYINKWIFVTITNRLGNSRIYINGNLI DEKS 187
DB 147 GBIITWLODTQBIKQVRVFKYSQMINISDYINRWIFVTITNRLNNSKIYINGRLIDQKP 206
QY 188 ISNLGDIHVSNDILFKIVGCDNT-RYVGIRYKFKVDTLTKTEIETLXSDDEPDSILKDF 246
DB 207 ISNLGNIHASNIMFKLDCRDTHTYIWKYFNLFKELNEKEIKLDYDQNSGILKDF 266
QY 247 WGNLYLLNRYKRYLLNLLRTDKSITQNS-----NFLINQOGRGVYQKPNFSTRLTGTVEV 302
DB 267 WGDYQYKPYKPYMLNLDYDKNVNVNNGIRGVYMLKGPGRVMTTNIYLSLRYGTGF 326
QY 303 IIRKNGSTDISNTDPRNDLAYINVDVDRDYELVADISTAKPEKIIKLRTSNNS 362
DB 327 IIRKVAS---GNKDNITVRNDRYINVVYKNEYRLATNASQAGVEKILSALEIPDVG- 382
QY 363 LGQIIWDS-----IGNCTNPFQNNNGNIGLGFHNSN-----LVASSWYNNIRKNTS 413
DB 383 LSQVVMKSKNDGKITNCKMLODNGNDIGFIGHQFNNTAKULVASWYNNRQIERSR 442

QY 414 SNGCFWSFISKEHGWOE 430
DB 443 TLGCSWEFIPVDDGWE 459
RESULT 10
US-08-405-496A-26
Sequence 26, Application US/08405496A
Patent No. 5919665
GENERAL INFORMATION:
APPLICANT: WILLIAMS, JAMES A.
TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM
TITLE OF INVENTION: NEUROTOXIN
NUMBER OF SEQUENCES: 30
CORRESPONDENCE ADDRESS:
ADDRESSEE: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: USA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/405,496A
FILING DATE: 16-MAR-1995
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01308
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 26:
SEQUENCE CHARACTERISTICS:
LENGTH: 462 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-405-496A-26

Query Match 48.7%; Score 1113.5; DB 1; Length 462;
Best Local Similarity 49.9%; Pred. NO. 9.2e-83;
Matches 218; Conservative 75; Mismatches 125; Indels 19; Gaps 7;
QY 8 LILYFNKLYKKIKONSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQFGIYSSKP 67
DB 28 LLSTTEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQIFNLES 87
QY 68 SEVNIAQNNDIYNGRYQNFSTFWIRIPKYNKVLNNEYTIIDCIRNNNSGKISLNY 127
DB 88 SKIEVLKNAIVNMYENFSTFWIRIPKYNFNSISLNEYTIINCM-ENNSGKVS LNY 146
QY 128 NKIIWTLODTAGNKKLVFNVTQMSISDYINKWIFVTITNRLGNSRIYINGNLI DEKS 187
DB 147 GBIITWLODTQBIKQVRVFKYSQMINISDYINRWIFVTITNRLNNSKIYINGRLIDQKP 206

188 ISNLGDIHVSNDILFKIVGNDT-RVVGIRYKVEFDELTGKTEIETLYSDPPSILKDF 246
207 ISNLGNTHASNNIMFKLDGCRDTHRYIWKYFNLFDKELNEKEIKOLYDNQSGILKDF 266
247 WGNLYLNKRYLLNLLRTDKSITONS----NFLNINQORGVYQKPNIFSNTRLYTGVEV 302
267 WGDYLDYDKFYMLNLYDPNKYVDVNVGIRGYMLKGRPGSVMTTNIYLNSSLYRGTKF 326
303 IIRKNGSTDINTDNFVRKNDLAYINVVDREYRLYADISIAPKEIKLIKITSNNS 362
327 IIRKNGSTDINTDNFVRKNDLAYINVVDREYRLYADISIAPKEIKLIKITSNNS 382
363 LGQIIYVDS-----IGNNCTMNFQNNNGNIGLLGHSNN----LVASSWYNNIRKNTS 413
383 LSQVVMKSKNDQGITNKCKNLDNNGNDIGFPHGFQFNIAKLVASNNYNNQIERSSR 442
414 SNGCFWSFISKEHGWOE 430
443 TLGCSWEFIPVDDGWE 459

RESULT 11

US-08-915-136-26
; Sequence 26, Application US/08915136
; Patent No. 6290960
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104

COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/915,136
; FILING DATE:

CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/480,604
; FILING DATE:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01763

TELECOMMUNICATION INFORMATION:

; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 26:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 462 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-915-136-26

Query Match 48.7%; Score 1113.5; DB 2; Length 462;
Best Local Similarity 49.9%; Pred. NO. 9.2e-83;
Matches 218; Conservative 75; Mismatches 125; Indels 19; Gaps 7;

QY 8 LILYFNKLYKKIKDNLDRYENKFIIDISGVGSINISGVYIYSTNRQFGIYSSKP 67
DB 28 LLSTFTEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKNQIQLENLES 87
QY 68 SEVNTAQNNDIIVNGRYQNFISFWVRIPKYFNKVLNNEYYTIDCIRNNNSGKISLNY 127
DB 88 SKIEVILKNAIVNYSMYENFSTFWIRIPKYPNSISLANEYTIINC-ENNSGKYSLNY 146
QY 128 NKIIWTLQDTAGNNQKLVFNYSYQISYINKWIFVTITNNRLNGSRYYINGLIDEKS 187
DB 147 GEIITWTLQDTQEIQRVWFYKYSQMINISDIYNRWIFVTITNNRLNNSKIYINGRLIDQKP 206
QY 188 ISNLGDIHVSNDILFKIVGNDT-RVVGIRYKVEFDELTGKTEIETLYSDPPSILKDF 246
DB 207 ISNLGNTHASNNIMFKLDGCRDTHRYIWKYFNLFDKELNEKEIKOLYDNQSGILKDF 266
QY 247 WGNLYLNKRYLLNLLRTDKSITONS----NFLNINQORGVYQKPNIFSNTRLYTGVEV 302
DB 267 WGDYLDYDKFYMLNLYDPNKYVDVNVGIRGYMLKGRPGSVMTTNIYLNSSLYRGTKF 326
QY 303 IIRKNGSTDINTDNFVRKNDLAYINVVDREYRLYADISIAPKEIKLIKITSNNS 362
DB 327 IIRKNGSTDINTDNFVRKNDLAYINVVDREYRLYADISIAPKEIKLIKITSNNS 382
QY 363 LGQIIYVDS-----IGNNCTMNFQNNNGNIGLLGHSNN----LVASSWYNNIRKNTS 413
DB 383 LSQVVMKSKNDQGITNKCKNLDNNGNDIGFPHGFQFNIAKLVASNNYNNQIERSSR 442
QY 414 SNGCFWSFISKEHGWOE 430
DB 443 TLGCSWEFIPVDDGWE 459

RESULT 12

US-09-084-517-26
; Sequence 26, Application US/09084517
; Patent No. 6613329
; GENERAL INFORMATION:

; APPLICANT: KINK, JOHN A.
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/09/084,517
; FILING DATE:


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; ORGANISM: Clostridium Botulinum
US-09-288-326A-9

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Best Local Similarity 51.4%; Pred. No. 3.4e-75;
Matches 197; Conservative 65; Mismatches 102; Indels 19; Gaps 7;

QY 62 IYSSKPEVNIQNDIIYNGRYCNFISFWIRIPKYNKVNLNNEYTIIDCIRNNNSGW 121
DB 2 LFNLESSKIEVILKNAIVNYSMTYENFTSWIRIPKYNFNSISLNNEYTIINCW-ENNSGW 60

QY 122 KISLNYNKIIITWLTQDTAGNQKLVFNFTQMSISDYINKWIFVFTITNNRLGNSRIYINGN 181
DB 61 KVSINYGELIITWLTQDTQEIQRVVFKYSQMINISDYINRWIFVFTITNNRLNNSKIYINGR 120

QY 182 LIDEKSIISNGDIHVSNIILFKVGCNDT-RYVGIRYKVPDFTLGKTEIETLYSDPDP 240
DB 121 LIDQKPIISNLGNTHASNNIMFKLDGCRDTHRYIWKYFNLFDKELNEKEIKDLYDNQSN 180

QY 241 SILKDFWGNLYLLNRYLLNLLRTDKSITONS-----NFLNINQORGVYQKPNIFSNTRL 296
DB 181 GILKDFWGDYLDQKPYMLNLYDPNKYVDVNVNGIRGYMYLKGPRGSMVTWIIYLNSSL 240

QY 297 YTGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIRT 356
DB 241 YRGTKFIKKYAS---GNKDNIVRNDRVYINVVKNKEYRLATNASQAGVEKILSALEI 297

QY 357 SNSNNSLGOIIVMDS-----IGNNCTMNFQNNNGNIGLLGPHSN-----LVASSWYNN 407
DB 298 PDVGN-LSQVVMKSKNDQGITNKKCMNLQDNNNGNDIGFIFGPHQFNNAIKNVSNWYNRQ 356

QY 408 IRKNTSSNGCFWFSFISKEHGWOE 430
DB 357 IERSRRLGCSWEFIPVDDGWE 379

Search completed: March 2, 2006, 00:49:32
Job time : 54 secs

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RESULT 15
US-09-548-409B-9
; Sequence 9, Application US/09548409B
; Patent No. 6843998
; GENERAL INFORMATION:
; APPLICANT: Steward, Lance E.
; APPLICANT: Aoki, K. Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Methods and Compositions for the
; TITLE OF INVENTION: Treatment of Pancreatitis
; FILE REFERENCE: 17282CIP(AP)
; CURRENT APPLICATION NUMBER: US/09/548,409B
; CURRENT FILING DATE: 2000-04-13
; PRIOR APPLICATION NUMBER: US 09/288,326
; PRIOR FILING DATE: 1999-04-08
; NUMBER OF SEQ ID NOS: 12
; SOFTWARE: FastSeq for Windows Version 3.0
; SEQ ID NO 9
; LENGTH: 382
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-09-548-409B-9

Query Match      44.6%; Score 1019.5; DB 2; Length 382;
Best Local Similarity 51.4%; Pred. No. 3.4e-75;
Matches 197; Conservative 65; Mismatches 102; Indels 19; Gaps 7;

QY 62 IYSSKPEVNIQNDIIYNGRYCNFISFWIRIPKYNKVNLNNEYTIIDCIRNNNSGW 121
DB 2 LFNLESSKIEVILKNAIVNYSMTYENFTSWIRIPKYNFNSISLNNEYTIINCW-ENNSGW 60

QY 122 KISLNYNKIIITWLTQDTAGNQKLVFNFTQMSISDYINKWIFVFTITNNRLGNSRIYINGN 181
DB 61 KVSINYGELIITWLTQDTQEIQRVVFKYSQMINISDYINRWIFVFTITNNRLNNSKIYINGR 120

QY 182 LIDEKSIISNGDIHVSNIILFKVGCNDT-RYVGIRYKVPDFTLGKTEIETLYSDPDP 240
DB 121 LIDQKPIISNLGNTHASNNIMFKLDGCRDTHRYIWKYFNLFDKELNEKEIKDLYDNQSN 180

QY 241 SILKDFWGNLYLLNRYLLNLLRTDKSITONS-----NFLNINQORGVYQKPNIFSNTRL 296
DB 181 GILKDFWGDYLDQKPYMLNLYDPNKYVDVNVNGIRGYMYLKGPRGSMVTWIIYLNSSL 240

QY 297 YTGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIRT 356
DB 241 YRGTKFIKKYAS---GNKDNIVRNDRVYINVVKNKEYRLATNASQAGVEKILSALEI 297

QY 357 SNSNNSLGOIIVMDS-----IGNNCTMNFQNNNGNIGLLGPHSN-----LVASSWYNN 407
DB 298 PDVGN-LSQVVMKSKNDQGITNKKCMNLQDNNNGNDIGFIFGPHQFNNAIKNVSNWYNRQ 356

QY 408 IRKNTSSNGCFWFSFISKEHGWOE 430
DB 357 IERSRRLGCSWEFIPVDDGWE 379

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GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 01:11:03 ; Search time 171.5 Seconds
(without alignments)
1050.055 Million cell updates/sec

Title: US-08-981-087b-1
Perfect score: 2288
Sequence: 1 SYTNDKILLYFNKLYKKIK.....TSSNGCFWSPISKEHGQEN 431

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 1867569 seqs, 417829326 residues

Total number of hits satisfying chosen parameters: 1867569

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Published Applications AA Main:
1: /cgn2_6/ptodata/1/pubaa/US07_PUBCOMB.pep.*
2: /cgn2_6/ptodata/1/pubaa/US08_PUBCOMB.pep.*
3: /cgn2_6/ptodata/1/pubaa/US09_PUBCOMB.pep.*
4: /cgn2_6/ptodata/1/pubaa/US10A_PUBCOMB.pep.*
5: /cgn2_6/ptodata/1/pubaa/US10B_PUBCOMB.pep.*
6: /cgn2_6/ptodata/1/pubaa/US11_PUBCOMB.pep.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	2288	100.0	431	2	US-08-981-087A-1
2	2288	100.0	432	3	US-09-910-186A-16
3	2288	100.0	432	3	US-09-910-186A-34
4	2288	100.0	432	4	US-10-452-024-178
5	2288	100.0	645	4	US-10-130-973A-8
6	2288	100.0	645	4	US-10-478-516-5
7	2288	100.0	657	4	US-10-478-516-6
8	2288	100.0	657	4	US-10-478-516-7
9	2288	100.0	685	4	US-10-130-973A-7
10	2288	100.0	862	4	US-10-130-973A-4
11	2288	100.0	887	4	US-10-130-973A-6
12	2288	100.0	979	4	US-10-478-516-26
13	2288	100.0	1032	4	US-10-130-973A-15
14	2288	100.0	1092	4	US-10-130-973A-14
15	2288	100.0	1192	4	US-10-478-516-23
16	2288	100.0	1192	4	US-10-478-516-24
17	2288	100.0	1278	4	US-10-452-024-152
18	2288	100.0	1278	4	US-10-205-516-12
19	2288	100.0	1288	4	US-10-205-516-26
20	1887.5	82.5	1280	4	US-10-452-024-162
21	1833	80.1	1274	4	US-10-354-774-71
22	1833	80.1	1274	4	US-10-271-012-71
23	1833	80.1	1274	4	US-10-452-024-6
24	1833	80.1	1274	4	US-10-729-122-71
25	1833	80.1	1274	4	US-10-729-039-71
26	1833	80.1	1274	5	US-10-729-527-71
27	1833	80.1	1274	5	US-10-727-898-71

28	1833	80.1	1274	5	US-10-728-696-71	Sequence 71, Appl
29	1833	80.1	1274	6	US-11-001-241-71	Sequence 71, Appl
30	1827	79.9	1268	4	US-10-452-024-156	Sequence 156, App
31	1800	78.7	448	4	US-10-354-774-73	Sequence 73, Appl
32	1800	78.7	448	4	US-10-271-012-73	Sequence 73, Appl
33	1800	78.7	448	4	US-10-729-122-73	Sequence 73, Appl
34	1800	78.7	448	4	US-10-729-039-73	Sequence 73, Appl
35	1800	78.7	448	5	US-10-729-527-73	Sequence 73, Appl
36	1800	78.7	448	5	US-10-727-898-73	Sequence 73, Appl
37	1800	78.7	448	5	US-10-728-696-73	Sequence 73, Appl
38	1800	78.7	448	6	US-11-001-241-73	Sequence 127, App
39	1458	63.7	1251	4	US-10-452-024-127	Sequence 14, Appl
40	1457.5	63.7	449	3	US-09-910-186A-14	Sequence 56, Appl
41	1457.5	63.7	452	4	US-10-354-774-56	Sequence 56, Appl
42	1457.5	63.7	452	4	US-10-271-012-56	Sequence 56, Appl
43	1457.5	63.7	452	4	US-10-729-122-56	Sequence 56, Appl
44	1457.5	63.7	452	4	US-10-729-039-56	Sequence 56, Appl
45	1457.5	63.7	452	5	US-10-729-527-56	Sequence 56, Appl

ALIGNMENTS

RESULT 1
US-08-981-087A-1
; Sequence 1, Application US/08981087A
; Publication No. US20020081304A1
GENERAL INFORMATION:
APPLICANT: Elmore, Michael J.
APPLICANT: Mauchline, Margaret L.
APPLICANT: Minton, Nigel P.
APPLICANT: Paschneik, Vladimir A.
APPLICANT: Titball, Richard W.
TITLE OF INVENTION: TYPE F BOTULINUM TOXIN AND USE THEREOF
NUMBER OF SEQUENCES: 6
CORRESPONDENCE ADDRESS:
ADDRESSEE: NIXON & VANDERHYE P.C.
STREET: 1100 No. US20020081304A1th Glebe Rd. 8th floor
CITY: Arlington
STATE: VA
COUNTRY: USA
ZIP: 22201-4741
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/981.087A
FILING DATE: 27-MAY-1998
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: PCT/GB96/01409
FILING DATE: 12-JUN-1996
PRIOR APPLICATION DATA:
APPLICATION NUMBER: GB 9511909.5
FILING DATE: 12-JUN-1995
ATTORNEY/AGENT INFORMATION:
NAME: Crawford, Arthur R.
REGISTRATION NUMBER: 25,327
REFERENCE/DOCKET NUMBER: 124-688
TELECOMMUNICATION INFORMATION:
TELEPHONE: 703-816-4000
TELEFAX: 703-816-4100
INFORMATION FOR SEQ ID NO: 1:
SEQUENCE CHARACTERISTICS:
LENGTH: 431 amino acids
TYPE: amino acid
STRANDEDNESS:
TOPOLOGY: linear
MOLECULE TYPE: peptide
US-08-981-087A-1

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Query Match      100.0%; Score 2288; DB 2; Length 431;
Best Local Similarity 100.0%; Pred. No. 1.2e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILLYFNKLYKKIKDINSILDMRYENKFKFIDISGYGNSISNGDVYIYSTNRNQF 60
   |||||
Db 1 SYTNDKILLYFNKLYKKIKDINSILDMRYENKFKFIDISGYGNSISNGDVYIYSTNRNQF 60
   |||||

QY 61 GIYSKSEVNIAQNNDIYNGRYQNFSPWVRIPKYPFNKVLNNEYTIIDCIRNNNSG 120
   |||||
Db 61 GIYSKSEVNIAQNNDIYNGRYQNFSPWVRIPKYPFNKVLNNEYTIIDCIRNNNSG 120
   |||||

QY 121 WKISLNYNKIIWTLDQTAGNNQKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 180
   |||||
Db 121 WKISLNYNKIIWTLDQTAGNNQKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 180
   |||||

QY 181 NLIDEKISNLGDIHVSDNLFKIVGNCNDRYVYVIRYKVPFDTLKGTEIETLYSDEPDP 240
   |||||
Db 181 NLIDEKISNLGDIHVSDNLFKIVGNCNDRYVYVIRYKVPFDTLKGTEIETLYSDEPDP 240
   |||||

QY 241 SILKDFWGNLYLLNKRYLLNLRDTSITQNSFNINQOQGVYQKPNIFSNTRLYTGV 300
   |||||
Db 241 SILKDFWGNLYLLNKRYLLNLRDTSITQNSFNINQOQGVYQKPNIFSNTRLYTGV 300
   |||||

QY 301 EVIIRKNGSTDISTNDFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 360
   |||||
Db 301 EVIIRKNGSTDISTNDFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 360
   |||||

QY 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGCFWS 420
   |||||
Db 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGCFWS 420
   |||||

QY 421 FISKEHGWQEN 431
   |||||
Db 421 FISKEHGWQEN 431
   |||||

RESULT 2
US-09-910-186A-16
; Sequence 16, Application US/09910186A
; Publication No. US20030009025A1
; GENERAL INFORMATION:
; APPLICANT: U.S. Army Medical Research & Material Command
; TITLE OF INVENTION: RECOMBINANT VACCINE AGAINST BOTULINUM
; FILE REFERENCE: A33626-A 067252.0107
; CURRENT APPLICATION NUMBER: US/09/910,186A
; CURRENT FILING DATE: 2001-07-20
; PRIOR APPLICATION NUMBER: PCT/US00/12890
; PRIOR FILING DATE: 2000-05-12
; PRIOR APPLICATION NUMBER: 60/133,865
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,866
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,867
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,868
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,869
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,873
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 08/123,975
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 16
; LENGTH: 432
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:

; OTHER INFORMATION: Synthetic Construct
US-09-910-186A-16

Query Match      100.0%; Score 2288; DB 3; Length 432;
Best Local Similarity 100.0%; Pred. No. 1.2e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILLYFNKLYKKIKDINSILDMRYENKFKFIDISGYGNSISNGDVYIYSTNRNQF 60
   |||||
Db 2 SYTNDKILLYFNKLYKKIKDINSILDMRYENKFKFIDISGYGNSISNGDVYIYSTNRNQF 61
   |||||

QY 61 GIYSKSEVNIAQNNDIYNGRYQNFSPWVRIPKYPFNKVLNNEYTIIDCIRNNNSG 120
   |||||
Db 62 GIYSKSEVNIAQNNDIYNGRYQNFSPWVRIPKYPFNKVLNNEYTIIDCIRNNNSG 121
   |||||

QY 121 WKISLNYNKIIWTLDQTAGNNQKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 180
   |||||
Db 122 WKISLNYNKIIWTLDQTAGNNQKLVFNVTOMISISDYINKWIFVTITNNRLGNSRIYING 181
   |||||

QY 181 NLIDEKISNLGDIHVSDNLFKIVGNCNDRYVYVIRYKVPFDTLKGTEIETLYSDEPDP 240
   |||||
Db 182 NLIDEKISNLGDIHVSDNLFKIVGNCNDRYVYVIRYKVPFDTLKGTEIETLYSDEPDP 241
   |||||

QY 241 SILKDFWGNLYLLNKRYLLNLRDTSITQNSFNINQOQGVYQKPNIFSNTRLYTGV 300
   |||||
Db 242 SILKDFWGNLYLLNKRYLLNLRDTSITQNSFNINQOQGVYQKPNIFSNTRLYTGV 301
   |||||

QY 301 EVIIRKNGSTDISTNDFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 360
   |||||
Db 302 EVIIRKNGSTDISTNDFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 361
   |||||

QY 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGCFWS 420
   |||||
Db 362 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGCFWS 421
   |||||

QY 421 FISKEHGWQEN 431
   |||||
Db 422 FISKEHGWQEN 432
   |||||

RESULT 3
US-09-910-186A-34
; Sequence 34, Application US/09910186A
; Publication No. US20030009025A1
; GENERAL INFORMATION:
; APPLICANT: U.S. Army Medical Research & Material Command
; TITLE OF INVENTION: RECOMBINANT VACCINE AGAINST BOTULINUM
; FILE REFERENCE: A33626-A 067252.0107
; CURRENT APPLICATION NUMBER: US/09/910,186A
; CURRENT FILING DATE: 2001-07-20
; PRIOR APPLICATION NUMBER: PCT/US00/12890
; PRIOR FILING DATE: 2000-05-12
; PRIOR APPLICATION NUMBER: 60/133,865
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,866
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,867
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,868
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,869
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,873
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 08/123,975
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 34
; LENGTH: 432
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; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Synthetic Construct
US-09-910-186A-34

Query Match      100.0%; Score 2288; DB 3; Length 432;
Best Local Similarity 100.0%; Pred. No. 1.2e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDMSILDREYNNKFDISGYGNSISNGDVYIYSTNRNQF 60
Db 2 SYTNDKILILYFNKLYKKIKDMSILDREYNNKFDISGYGNSISNGDVYIYSTNRNQF 61
Qy 61 GIYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVNLANNEYTIIIDCIRNNSG 120
Db 62 GIYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVNLANNEYTIIIDCIRNNSG 121
Qy 121 WKISLANYNKIIITWLTQDTAGNNQKLVFNQYTMISISDYINKWIFVTITNNRLGNSRIYING 180
Db 122 WKISLANYNKIIITWLTQDTAGNNQKLVFNQYTMISISDYINKWIFVTITNNRLGNSRIYING 181
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Db 182 NLIDEKSIISNLGDIHVSNDNLFKIVGNCNDRYVYVIRYFKYVDFDELGKTEIETLYSDPDP 241
Qy 241 SILKDFWGNLYLLNKRYYLLNLRITDKSITQNSFNPLNQOQGVYQKPNIFSNTRLTYGV 300
Db 242 SILKDFWGNLYLLNKRYYLLNLRITDKSITQNSFNPLNQOQGVYQKPNIFSNTRLTYGV 301
Qy 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIRTSNSN 360
Db 302 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIRTSNSN 361
Qy 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
Db 362 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 421
Qy 421 FISKEHGQWEN 431
Db 422 FISKEHGQWEN 432

RESULT 4
US-10-452-024-178
; Sequence 178, Application US/10452024
; Publication No. US20040013687A1
; GENERAL INFORMATION:
; APPLICANT: Simpson, Lance
; APPLICANT: Park, Jung-Beak
; APPLICANT: Makymowych, Andrew
; TITLE OF INVENTION: Compositions and Methods For Trans epithelial Molecular Transport
; FILE REFERENCE: 9855-96U1
; CURRENT APPLICATION NUMBER: US/10/452,024
; PRIOR FILING DATE: 2003-06-02
; PRIOR APPLICATION NUMBER: 60/384,949
; PRIOR FILING DATE: 2002-05-31
; NUMBER OF SEQ ID NOS: 188
; SOFTWARE: PatentIn version 3.2
; SEQ ID NO 178
; LENGTH: 432
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-10-452-024-178

Query Match      100.0%; Score 2288; DB 4; Length 432;
Best Local Similarity 100.0%; Pred. No. 1.2e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDMSILDREYNNKFDISGYGNSISNGDVYIYSTNRNQF 60
Db 2 SYTNDKILILYFNKLYKKIKDMSILDREYNNKFDISGYGNSISNGDVYIYSTNRNQF 61

; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Synthetic Construct
US-10-130-973A-8
; Sequence 8, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 8
; LENGTH: 645
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-10-130-973A-8

Query Match      100.0%; Score 2288; DB 4; Length 645;
Best Local Similarity 100.0%; Pred. No. 1.9e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDMSILDREYNNKFDISGYGNSISNGDVYIYSTNRNQF 60
Db 215 SYTNDKILILYFNKLYKKIKDMSILDREYNNKFDISGYGNSISNGDVYIYSTNRNQF 274
Qy 61 GIYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVNLANNEYTIIIDCIRNNSG 120
Db 275 GIYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVNLANNEYTIIIDCIRNNSG 334
Qy 121 WKISLANYNKIIITWLTQDTAGNNQKLVFNQYTMISISDYINKWIFVTITNNRLGNSRIYING 180
Db 335 WKISLANYNKIIITWLTQDTAGNNQKLVFNQYTMISISDYINKWIFVTITNNRLGNSRIYING 394
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Qy 61 GIYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVNLANNEYTIIIDCIRNNSG 120
Db 62 GIYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVNLANNEYTIIIDCIRNNSG 121
Qy 121 WKISLANYNKIIITWLTQDTAGNNQKLVFNQYTMISISDYINKWIFVTITNNRLGNSRIYING 180
Db 122 WKISLANYNKIIITWLTQDTAGNNQKLVFNQYTMISISDYINKWIFVTITNNRLGNSRIYING 181
Qy 181 NLIDEKSIISNLGDIHVSNDNLFKIVGNCNDRYVYVIRYFKYVDFDELGKTEIETLYSDPDP 240
Db 182 NLIDEKSIISNLGDIHVSNDNLFKIVGNCNDRYVYVIRYFKYVDFDELGKTEIETLYSDPDP 241
Qy 241 SILKDFWGNLYLLNKRYYLLNLRITDKSITQNSFNPLNQOQGVYQKPNIFSNTRLTYGV 300
Db 242 SILKDFWGNLYLLNKRYYLLNLRITDKSITQNSFNPLNQOQGVYQKPNIFSNTRLTYGV 301
Qy 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIRTSNSN 360
Db 302 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIRTSNSN 361
Qy 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
Db 362 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 421
Qy 421 FISKEHGQWEN 431
Db 422 FISKEHGQWEN 432
```

```
RESULT 5
US-10-130-973A-8
; Sequence 8, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 8
; LENGTH: 645
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-10-130-973A-8
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```
Query Match      100.0%; Score 2288; DB 4; Length 645;
Best Local Similarity 100.0%; Pred. No. 1.9e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
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Qy 1 SYTNDKILILYFNKLYKKIKDMSILDREYNNKFDISGYGNSISNGDVYIYSTNRNQF 60
Db 215 SYTNDKILILYFNKLYKKIKDMSILDREYNNKFDISGYGNSISNGDVYIYSTNRNQF 274
Qy 61 GIYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVNLANNEYTIIIDCIRNNSG 120
Db 275 GIYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYFNKVNLANNEYTIIIDCIRNNSG 334
Qy 121 WKISLANYNKIIITWLTQDTAGNNQKLVFNQYTMISISDYINKWIFVTITNNRLGNSRIYING 180
Db 335 WKISLANYNKIIITWLTQDTAGNNQKLVFNQYTMISISDYINKWIFVTITNNRLGNSRIYING 394
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181 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYKVPDTELKTELETLYSDPDP 240
Db |||||
395 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYKVPDTELKTELETLYSDPDP 454
Qy |||||
241 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGYYQKPNFNSNRLTYGV 300
Db |||||
455 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGYYQKPNFNSNRLTYGV 514
Qy |||||
301 EVIIRKNGSTDISTNDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 360
Db |||||
515 EVIIRKNGSTDISTNDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 574
Qy |||||
361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGCFWS 420
Db |||||
575 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGCFWS 634
Qy |||||
421 FISKEHGWOEN 431
Db |||||
635 FISKEHGWOEN 645

RESULT 6
US-10-478-516-5
; Sequence 5, Application US/10478516
; Publication No. US20040208889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 5
; LENGTH: 645
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: diphtheria toxin translocation domain with Bont/F-HC
US-10-478-516-5

Query Match 100.0%; Score 2288; DB 4; Length 645;
Best Local Similarity 100.0%; Pred. No. 1.9e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDNLDMRYENKPFIDISGYGNSISNGDVYIYSTNRNQF 60
Db |||||
215 SYTNDKILILYFNKLYKKIKDNLDMRYENKPFIDISGYGNSISNGDVYIYSTNRNQF 274
Qy 61 GYSSKPESEVNIQAQNDIYNGRYQNFISFWVRIPKYNKVNLNNEYTIIDCIRNNNSG 120
Db |||||
275 GYSSKPESEVNIQAQNDIYNGRYQNFISFWVRIPKYNKVNLNNEYTIIDCIRNNNSG 334
Qy 121 WKISLNYNKKIITWLTQDTAGNKKLVFNVTOMISIDYINKWIFVTITNNRLGNSRIYING 180
Db |||||
335 WKISLNYNKKIITWLTQDTAGNKKLVFNVTOMISIDYINKWIFVTITNNRLGNSRIYING 394
Qy 181 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYKVPDTELKTELETLYSDPDP 240
Db |||||
395 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYKVPDTELKTELETLYSDPDP 454
Qy 241 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGYYQKPNFNSNRLTYGV 300
Db |||||
455 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGYYQKPNFNSNRLTYGV 514
Qy 301 EVIIRKNGSTDISTNDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 360
Db |||||
515 EVIIRKNGSTDISTNDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 574

Qy 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGCFWS 420
Db |||||
575 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGCFWS 634
Qy 421 FISKEHGWOEN 431
Db |||||
635 FISKEHGWOEN 645

RESULT 7

US-10-478-516-6
; Sequence 6, Application US/10478516
; Publication No. US20040208889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 6
; LENGTH: 657
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: thrombin linker, diphtheria toxin translocation domain, Bont/F-HC
US-10-478-516-6

Query Match 100.0%; Score 2288; DB 4; Length 657;
Best Local Similarity 100.0%; Pred. No. 1.9e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDNLDMRYENKPFIDISGYGNSISNGDVYIYSTNRNQF 60
Db |||||
227 SYTNDKILILYFNKLYKKIKDNLDMRYENKPFIDISGYGNSISNGDVYIYSTNRNQF 286
Qy 61 GYSSKPESEVNIQAQNDIYNGRYQNFISFWVRIPKYNKVNLNNEYTIIDCIRNNNSG 120
Db |||||
287 GYSSKPESEVNIQAQNDIYNGRYQNFISFWVRIPKYNKVNLNNEYTIIDCIRNNNSG 346
Qy 121 WKISLNYNKKIITWLTQDTAGNKKLVFNVTOMISIDYINKWIFVTITNNRLGNSRIYING 180
Db |||||
347 WKISLNYNKKIITWLTQDTAGNKKLVFNVTOMISIDYINKWIFVTITNNRLGNSRIYING 406
Qy 181 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYKVPDTELKTELETLYSDPDP 240
Db |||||
407 NLIDEKSIISNLGDIHVSNDILFKIVGNDTRYGIRYKVPDTELKTELETLYSDPDP 466
Qy 241 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGYYQKPNFNSNRLTYGV 300
Db |||||
467 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGYYQKPNFNSNRLTYGV 526
Qy 301 EVIIRKNGSTDISTNDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 360
Db |||||
527 EVIIRKNGSTDISTNDNFVRKNDLAYINVVDREVYRLYADISIAKPEKIIKLIRTSNSN 596
Qy 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGCFWS 420
Db |||||
587 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNIRKNTSSNGCFWS 646
Qy 421 FISKEHGWOEN 431
Db |||||
647 FISKEHGWOEN 657

RESULT 8

US-10-478-516-7
; Sequence 7, Application US/10478516
; Publication No. US20040208889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; CURRENT FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 7
; LENGTH: 657
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: factor Xa linker, diphtheria toxin translocation domain, BoNT/F-H
US-10-478-516-7

Query Match 100.0%; Score 2288; DB 4; Length 657;
Best Local Similarity 100.0%; Pred. No. 1.9e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKNSILDMRYENKFKFIDISGYGNSISINGDVVIYSTNRNQF 60
DB 227 SYTNDKILILYFNKLYKKIKNSILDMRYENKFKFIDISGYGNSISINGDVVIYSTNRNQF 286

QY 61 GIYSSKPEVNIAQNNDIYNGRYQNFSEFWVRIPKYPFNKVNLLNNEYTIIDCIRNNNSG 120
DB 287 GIYSSKPEVNIAQNNDIYNGRYQNFSEFWVRIPKYPFNKVNLLNNEYTIIDCIRNNNSG 346

QY 121 WKISLNYNKIITWLODTAGNOKLVFNVTOMISIDYINKWIFVTITNNLNSRIYING 180
DB 347 WKISLNYNKIITWLODTAGNOKLVFNVTOMISIDYINKWIFVTITNNLNSRIYING 406

QY 181 NLIDEKSIISNLGDIHVSNDILFKIVGCDTRYGVIRYFKVFDTELKTEIETLYSDEPDP 240
DB 407 NLIDEKSIISNLGDIHVSNDILFKIVGCDTRYGVIRYFKVFDTELKTEIETLYSDEPDP 466

QY 241 SILKDFWGNLYLLNRYKRYLLNLRDTSITQNSFLNINQORGVYQKPNIFSNTRYLTGV 300
DB 467 SILKDFWGNLYLLNRYKRYLLNLRDTSITQNSFLNINQORGVYQKPNIFSNTRYLTGV 526

QY 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVLYADISIAKPEKIKLIRTSNSN 360
DB 527 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVLYADISIAKPEKIKLIRTSNSN 586

QY 361 NSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNLLVASSWYNNIRKNTSSNGCFWS 420
DB 587 NSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNLLVASSWYNNIRKNTSSNGCFWS 646

QY 421 FISKEHGWQEN 431
DB 647 FISKEHGWQEN 657

RESULT 9
US-10-130-973A-7
; Sequence 7, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21

PRIOR APPLICATION NUMBER: PCT/GB00/04644
PRIOR FILING DATE: 2000-12-04
PRIOR APPLICATION NUMBER: GB 9928530.6
PRIOR FILING DATE: 1999-12-02
PRIOR APPLICATION NUMBER: GB 008658.7
PRIOR FILING DATE: 2000-04-07
NUMBER OF SEQ ID NOS: 18
SOFTWARE: PatentIn version 3.0
SEQ ID NO 7
LENGTH: 685
TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
OTHER INFORMATION: synthetic construct
US-10-130-973A-7

Query Match 100.0%; Score 2288; DB 4; Length 685;
Best Local Similarity 100.0%; Pred. No. 2e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKNSILDMRYENKFKFIDISGYGNSISINGDVVIYSTNRNQF 60
DB 255 SYTNDKILILYFNKLYKKIKNSILDMRYENKFKFIDISGYGNSISINGDVVIYSTNRNQF 314

QY 61 GIYSSKPEVNIAQNNDIYNGRYQNFSEFWVRIPKYPFNKVNLLNNEYTIIDCIRNNNSG 120
DB 315 GIYSSKPEVNIAQNNDIYNGRYQNFSEFWVRIPKYPFNKVNLLNNEYTIIDCIRNNNSG 374

QY 121 WKISLNYNKIITWLODTAGNOKLVFNVTOMISIDYINKWIFVTITNNLNSRIYING 180
DB 375 WKISLNYNKIITWLODTAGNOKLVFNVTOMISIDYINKWIFVTITNNLNSRIYING 434

QY 181 NLIDEKSIISNLGDIHVSNDILFKIVGCDTRYGVIRYFKVFDTELKTEIETLYSDEPDP 240
DB 435 NLIDEKSIISNLGDIHVSNDILFKIVGCDTRYGVIRYFKVFDTELKTEIETLYSDEPDP 494

QY 241 SILKDFWGNLYLLNRYKRYLLNLRDTSITQNSFLNINQORGVYQKPNIFSNTRYLTGV 300
DB 495 SILKDFWGNLYLLNRYKRYLLNLRDTSITQNSFLNINQORGVYQKPNIFSNTRYLTGV 554

QY 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVLYADISIAKPEKIKLIRTSNSN 360
DB 555 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVLYADISIAKPEKIKLIRTSNSN 614

QY 361 NSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNLLVASSWYNNIRKNTSSNGCFWS 420
DB 615 NSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNLLVASSWYNNIRKNTSSNGCFWS 674

QY 421 FISKEHGWQEN 431
DB 675 FISKEHGWQEN 685

RESULT 10
US-10-130-973A-4
; Sequence 4, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0

; SEQ ID NO 4
; LENGTH: 862
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-10-130-973A-4

Query Match 100.0%; Score 2288; DB 4; Length 862;
Best Local Similarity 100.0%; Pred. No. 2.6e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDNLDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
Db 432 SYTNDKILILYFNKLYKKIKDNLDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 491

Qy 61 GIYSSKPESEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPKVNKNLNEYTIIDCIRNNSG 120
Db 492 GIYSSKPESEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPKVNKNLNEYTIIDCIRNNSG 551

Qy 121 WKISLNYNKLIIWLTQDTAGNKNQKLVFNQYQMSISDYINKWIFVTITNNLGSRIYING 180
Db 552 WKISLNYNKLIIWLTQDTAGNKNQKLVFNQYQMSISDYINKWIFVTITNNLGSRIYING 611

Qy 181 NLIDEKISNLGDIHVSNDILFKIVGNCNDRYVIRYFKVDFTELKTEIETIYSDEPDP 240
Db 612 NLIDEKISNLGDIHVSNDILFKIVGNCNDRYVIRYFKVDFTELKTEIETIYSDEPDP 671

Qy 241 SILKDFWGNLYLNKRYLLNLLRTDKSITQNSNLFNINQORGVYQKPNIFSNTRLYTG 300
Db 672 SILKDFWGNLYLNKRYLLNLLRTDKSITQNSNLFNINQORGVYQKPNIFSNTRLYTG 731

Qy 301 EVIIRKNGSTDISTNDFVRKNDLAYINVVDROVEYRLYADISIAKPEKIKLIRTSNSN 360
Db 732 EVIIRKNGSTDISTNDFVRKNDLAYINVVDROVEYRLYADISIAKPEKIKLIRTSNSN 791

Qy 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
Db 792 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 851

Qy 421 FISKEHGQWEN 431
Db 852 FISKEHGQWEN 862

RESULT 11
US-10-130-973A-6
; Sequence 6, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, John
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.092000
; CURRENT APPLICATION NUMBER: US/10/130, 973A
; PRIOR FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04544
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 6
; LENGTH: 887
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-10-130-973A-6

Query Match 100.0%; Score 2288; DB 4; Length 887;
Best Local Similarity 100.0%; Pred. No. 2.7e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDNLDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
Db 457 SYTNDKILILYFNKLYKKIKDNLDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 516

Qy 61 GIYSSKPESEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPKVNKNLNEYTIIDCIRNNSG 120
Db 517 GIYSSKPESEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPKVNKNLNEYTIIDCIRNNSG 576

Qy 121 WKISLNYNKLIIWLTQDTAGNKNQKLVFNQYQMSISDYINKWIFVTITNNLGSRIYING 180
Db 577 WKISLNYNKLIIWLTQDTAGNKNQKLVFNQYQMSISDYINKWIFVTITNNLGSRIYING 636

Qy 181 NLIDEKISNLGDIHVSNDILFKIVGNCNDRYVIRYFKVDFTELKTEIETIYSDEPDP 240
Db 637 NLIDEKISNLGDIHVSNDILFKIVGNCNDRYVIRYFKVDFTELKTEIETIYSDEPDP 696

Qy 241 SILKDFWGNLYLNKRYLLNLLRTDKSITQNSNLFNINQORGVYQKPNIFSNTRLYTG 300
Db 697 SILKDFWGNLYLNKRYLLNLLRTDKSITQNSNLFNINQORGVYQKPNIFSNTRLYTG 756

Qy 301 EVIIRKNGSTDISTNDFVRKNDLAYINVVDROVEYRLYADISIAKPEKIKLIRTSNSN 360
Db 757 EVIIRKNGSTDISTNDFVRKNDLAYINVVDROVEYRLYADISIAKPEKIKLIRTSNSN 816

Qy 361 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
Db 817 NSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 876

Qy 421 FISKEHGQWEN 431
Db 877 FISKEHGQWEN 887

RESULT 12
US-10-478-516-26
; Sequence 26, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; APPLICANT: Shone, Clifford C.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.100000
; CURRENT APPLICATION NUMBER: US/10/478, 516
; PRIOR FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 26
; LENGTH: 979
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Protein sequence for YopT, factor Xa linker, diphtheria toxin
; OTHER INFORMATION: translocation
; OTHER INFORMATION: domain, with BoNT/F-HC
US-10-478-516-26

Query Match 100.0%; Score 2288; DB 4; Length 979;
Best Local Similarity 100.0%; Pred. No. 3.1e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDNLDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
Db 549 SYTNDKILILYFNKLYKKIKDNLDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 608

Qy 61 GIYSSKPESEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPKVNKNLNEYTIIDCIRNNSG 120

Db 609 GYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVNLANEYTIIDCIRNNSG 668
Qy 121 WKISLNYNKIIWTLODTAGNKKLVFNQYOMISDYNKWI FVTITNNLGNRIYING 180
Db 669 WKISLNYNKIIWTLODTAGNKKLVFNQYOMISDYNKWI FVTITNNLGNRIYING 728
Qy 181 NLIDEKSI NGLDTHVSDNLFKIVGCDNTRYGVIRYKVFDTLGLKTEIETLYSDEPDP 240
Db 729 NLIDEKSI NGLDTHVSDNLFKIVGCDNTRYGVIRYKVFDTLGLKTEIETLYSDEPDP 788
Qy 241 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGYYQKPNIFSNTLYTGV 300
Db 789 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGYYQKPNIFSNTLYTGV 848
Qy 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIRTSNSN 360
Db 849 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIRTSNSN 908
Qy 361 NSLGQIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
Db 909 NSLGQIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 968
Qy 421 FISKEHGWQEN 431
Db 969 FISKEHGWQEN 979

RESULT 13
US-10-130-973A-15
; Sequence 15, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 15
; LENGTH: 1032
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-10-130-973A-15

Query Match 100.0%; Score 2288; DB 4; Length 1032;
Best Local Similarity 100.0%; Pred. No. 3.3e-154; Mismatches 0; Indels 0; Gaps 0;
Matches 431; Conservative 0;
Qy 1 SYTNDKILLYFNKLYKKIKONSILDMRYENKFDISGYGNSISNGDVYIYSTNRNQF 60
Db 602 SYTNDKILLYFNKLYKKIKONSILDMRYENKFDISGYGNSISNGDVYIYSTNRNQF 661
Qy 61 GYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVNLANEYTIIDCIRNNSG 120
Db 662 GYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVNLANEYTIIDCIRNNSG 721
Qy 121 WKISLNYNKIIWTLODTAGNKKLVFNQYOMISDYNKWI FVTITNNLGNRIYING 180
Db 722 WKISLNYNKIIWTLODTAGNKKLVFNQYOMISDYNKWI FVTITNNLGNRIYING 781
Qy 181 NLIDEKSI NGLDTHVSDNLFKIVGCDNTRYGVIRYKVFDTLGLKTEIETLYSDEPDP 240
Db 782 NLIDEKSI NGLDTHVSDNLFKIVGCDNTRYGVIRYKVFDTLGLKTEIETLYSDEPDP 841

Qy 241 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGYYQKPNIFSNTLYTGV 300
Db 842 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGYYQKPNIFSNTLYTGV 901
Qy 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIRTSNSN 360
Db 902 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIRTSNSN 961
Qy 361 NSLGQIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
Db 962 NSLGQIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 1021
Qy 421 FISKEHGWQEN 431
Db 1022 FISKEHGWQEN 1032

RESULT 14
US-10-130-973A-14
; Sequence 14, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 14
; LENGTH: 1092
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-10-130-973A-14
Query Match 100.0%; Score 2288; DB 4; Length 1092;
Best Local Similarity 100.0%; Pred. No. 3.5e-154; Mismatches 0; Indels 0; Gaps 0;
Matches 431; Conservative 0;
Qy 1 SYTNDKILLYFNKLYKKIKONSILDMRYENKFDISGYGNSISNGDVYIYSTNRNQF 60
Db 662 SYTNDKILLYFNKLYKKIKONSILDMRYENKFDISGYGNSISNGDVYIYSTNRNQF 721
Qy 61 GYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVNLANEYTIIDCIRNNSG 120
Db 722 GYSSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYPFNKVNLANEYTIIDCIRNNSG 781
Qy 121 WKISLNYNKIIWTLODTAGNKKLVFNQYOMISDYNKWI FVTITNNLGNRIYING 180
Db 782 WKISLNYNKIIWTLODTAGNKKLVFNQYOMISDYNKWI FVTITNNLGNRIYING 841
Qy 181 NLIDEKSI NGLDTHVSDNLFKIVGCDNTRYGVIRYKVFDTLGLKTEIETLYSDEPDP 240
Db 842 NLIDEKSI NGLDTHVSDNLFKIVGCDNTRYGVIRYKVFDTLGLKTEIETLYSDEPDP 901
Qy 241 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGYYQKPNIFSNTLYTGV 300
Db 902 SILKDFWGNLYLLNKRYYLLNLLRTDKSITQNSNFLNINQORGYYQKPNIFSNTLYTGV 961
Qy 301 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIRTSNSN 360
Db 962 EVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKIIKLIRTSNSN 1021
Qy 361 NSLGQIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420

Job time : 173.5 secs

Db 1022 NSLQIIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNLVASSWYNNIRKNTSSNGCFWS 1081
QY 421 FISKEHCWQEN 431
Db 1082 FISKEHCWQEN 1092

RESULT 15
US-10-478-516-23
; Sequence 23, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; CURRENT FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 23
; LENGTH: 1192
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: Protein sequence for SigD with the first 29 codons removed, thron
; OTHER INFORMATION: linker,
; OTHER INFORMATION: diphtheria toxin translocation domain, with BoNT/F-HC
US-10-478-516-23

Query Match 100.0%; Score 2288; DB 4; Length 1192;
Best Local Similarity 100.0%; Pred. NO. 3.9e-154;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 SYTNDKILILFYFNKLYKKIKDINSILDMRYENKRFIDISGYGNSISINGDVYIYSTNRNQF 60
Db 762 SYTNDKILILFYFNKLYKKIKDINSILDMRYENKRFIDISGYGNSISINGDVYIYSTNRNQF 821
QY 61 GIYSSKPESEVNIQANDIIYNGRYQNFISFWVRIPKPYFNKVLNNEYYTIIDCIRNNNSG 120
Db 822 GIYSSKPESEVNIQANDIIYNGRYQNFISFWVRIPKPYFNKVLNNEYYTIIDCIRNNNSG 881
QY 121 WKISLNYNKKIITLQDTAGNKKLVFNQYQMSISDYINKWIFVTITNNELGNSRIYING 180
Db 882 WKISLNYNKKIITLQDTAGNKKLVFNQYQMSISDYINKWIFVTITNNELGNSRIYING 941
QY 181 NLIDEXSISNLGDHVSNDNLFKIVGCDNTRYGVIRYKPVDTLGLKTEIETLYSDEPDP 240
Db 942 NLIDEXSISNLGDHVSNDNLFKIVGCDNTRYGVIRYKPVDTLGLKTEIETLYSDEPDP 1001
QY 241 SILKDFWGNLYLLNKRYYLLNLRKTSITQNSNFINQORGVYQKPNIFSNTRLYTGV 300
Db 1002 SILKDFWGNLYLLNKRYYLLNLRKTSITQNSNFINQORGVYQKPNIFSNTRLYTGV 1061
QY 301 EVIIRKNGSTDISNTDNFVRNDLAYINVVDRODVEYRLYADISIAKPEKIIKLIRTSNSN 360
Db 1062 EVIIRKNGSTDISNTDNFVRNDLAYINVVDRODVEYRLYADISIAKPEKIIKLIRTSNSN 1121
QY 361 NSLQIIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNLVASSWYNNIRKNTSSNGCFWS 420
Db 1122 NSLQIIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNLVASSWYNNIRKNTSSNGCFWS 1181
QY 421 FISKEHCWQEN 431
Db 1182 FISKEHCWQEN 1192

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OM protein - protein search, using sw model

Run on: March 2, 2006, 01:12:18 ; Search time 17.5 Seconds
(without alignments)
491.279 Million cell updates/sec

Title: US-08-981-087B-1

Perfect score: 2288

Sequence: 1 SYTNDKILILYFNKLYKKIK.....TSSNGCFWSPISKEHQWQEN 431

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 133702 seqs, 19947517 residues

Total number of hits satisfying chosen parameters: 133702

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Maximum Match 0%

Listing first 45 summaries

Database : Published Applications AA New:

- 1: /cgn2_6/ptodata/1/pubpaa/US08 NEW PUB.pap.*
- 2: /cgn2_6/ptodata/1/pubpaa/US06 NEW PUB.pap.*
- 3: /cgn2_6/ptodata/1/pubpaa/US07 NEW PUB.pap.*
- 4: /cgn2_6/ptodata/1/pubpaa/PCT_NEW PUB.pap.*
- 5: /cgn2_6/ptodata/1/pubpaa/US09 NEW PUB.pap.*
- 6: /cgn2_6/ptodata/1/pubpaa/US10 NEW PUB.pap.*
- 7: /cgn2_6/ptodata/1/pubpaa/US11 NEW PUB.pap.*
- 8: /cgn2_6/ptodata/1/pubpaa/US60 NEW PUB.pap.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	2288	100.0	1059	7 US/11/062	Sequence 5, Appli
2	2288	100.0	1084	7 US/11/062	Sequence 8, Appli
3	1833	80.1	838	6 US-10-909-769-28	Sequence 28, Appl
4	1457.5	63.7	829	6 US-10-909-769-26	Sequence 26, Appl
5	1120.5	49.0	849	6 US-10-909-769-18	Sequence 18, Appl
6	1120.5	49.0	1067	7 US/11/062	Sequence 3, Appli
7	1120.5	49.0	1092	7 US/11/062	Sequence 6, Appli
8	781	34.1	900	6 US-10-909-769-20	Sequence 20, Appl
9	769	33.6	1070	7 US/11/062	Sequence 4, Appli
10	769	33.6	1095	6 US/11/062	Sequence 7, Appli
11	736.5	32.2	855	6 US-10-909-769-30	Sequence 30, Appl
12	676.5	29.6	1169	7 US-11-077-550-20	Sequence 20, Appl
13	580.5	25.4	834	6 US-10-909-769-24	Sequence 24, Appl
14	553	24.2	1315	7 US-11-077-550-141	Sequence 141, App
15	546	23.9	842	6 US-10-909-769-22	Sequence 22, Appl
16	160	7.0	588	7 US-11-052-554A-339	Sequence 339, App
17	149.5	6.5	2340	7 US-11-052-554A-171	Sequence 171, App
18	147	6.4	2710	7 US-11-051-453-41	Sequence 41, Appl
19	135	5.9	2302	7 US-11-052-554A-91	Sequence 91, Appl
20	129	5.6	2367	7 US-11-051-453-42	Sequence 42, Appl
21	126	5.5	874	7 US-11-087-099-10263	Sequence 10263, A
22	125.5	5.5	849	7 US-11-087-099-1756	Sequence 1756, Ap
23	125.5	5.5	3194	7 US-11-052-554A-90	Sequence 90, Appl
24	125	5.5	871	7 US-11-087-099-6053	Sequence 6053, Ap
25	120	5.2	567	6 US-10-485-517-216	Sequence 216, App

ALIGNMENTS

RESULT 1

US/11/062
; Sequence 5, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassem
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062, 471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831, 050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: Patent In Ver. 2.1
; SEQ ID NO 5
; LENGTH: 1059
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
US/11/062, 471A-5

Query Match 100.0%; Score 2288; DB 7; Length 1059;
Best Local Similarity 100.0%; Pred. No. 3.4e-160;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY	1	SYTNDKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYGNSISNGDVVYISTNRNQF	60
DB	629	SYTNDKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYGNSISNGDVVYISTNRNQF	688
QY	61	GIYSKSEVNIAQNNDIYNGRYONFSPISFWRIPKYFNKVNLNNEYYIIDCRNNSG	120
DB	689	GIYSKSEVNIAQNNDIYNGRYONFSPISFWRIPKYFNKVNLNNEYYIIDCRNNSG	748
QY	121	WKISLNYNKKIITWTDQTAGNKKLVFNFTOMISISDYINKWIFVTITNNLGNRIYING	180
DB	749	WKISLNYNKKIITWTDQTAGNKKLVFNFTOMISISDYINKWIFVTITNNLGNRIYING	808
QY	181	NLIDKESISNLGDIHVSNDILFKIVGNDTRYGVIRYKFDTELKTEIETLSDPD	240
DB	809	NLIDKESISNLGDIHVSNDILFKIVGNDTRYGVIRYKFDTELKTEIETLSDPD	868

QY 241 SILKDFWGNLYLNKRYLLNLRDTSITQNSNPLNINQORGUYQKPNIFSNTRLTYGV 300
Db 869 SILKDFWGNLYLNKRYLLNLRDTSITQNSNPLNINQORGUYQKPNIFSNTRLTYGV 928
QY 301 EVIIRKNGSTDSINTDNFVRKNDLAYINVVDREVRLYADISIAKPEKIIKIRTSNSN 360
Db 929 EVIIRKNGSTDSINTDNFVRKNDLAYINVVDREVRLYADISIAKPEKIIKIRTSNSN 988
QY 361 NSLGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
Db 989 NSLGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 1048
QY 421 FISKEHGWQEN 431
Db 1049 FISKEHGWQEN 1059

RESULT 2

US/11/062

; Sequence 8, Application US/11062471A

; Publication No. US2005025093A1

; GENERAL INFORMATION:

; APPLICANT: SHONE, Clifford Charles

; APPLICANT: SUTTON, John Mark

; APPLICANT: HALLIS, Bassam

; APPLICANT: SILMAN, Nigel

; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells

; FILE REFERENCE: 1581.0800001

; CURRENT APPLICATION NUMBER: US/11/062.471A

; CURRENT FILING DATE: 2005-02-22

; PRIOR APPLICATION NUMBER: 09/831,050

; PRIOR FILING DATE: 1999-11-05

; PRIOR APPLICATION NUMBER: PCT/GB99/03699

; PRIOR FILING DATE: 1999-11-05

; PRIOR APPLICATION NUMBER: GB 9824282.9

; PRIOR FILING DATE: 1998-11-05

; NUMBER OF SEQ ID NOS: 11

; SOFTWARE: Patent In Ver. 2.1

; SEQ ID NO 8

; LENGTH: 1084

; TYPE: PRT

; ORGANISM: Artificial Sequence

; FEATURE:

; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M

US/11/062.471A-8

Query Match 100.0%; Score 2288; DB 7; Length 1084;
Best Local Similarity 100.0%; Pred. No. 3.5e-160;
Matches 431; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 SYTNDKILILYFNKLYKKIKDNLDMRYENKPFIDISGYGNSISNGDVVYIYSTNRNQF 60
Db 654 SYTNDKILILYFNKLYKKIKDNLDMRYENKPFIDISGYGNSISNGDVVYIYSTNRNQF 713
QY 61 GYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 120
Db 714 GYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 773
QY 121 WKISLNYNK---IWTLODTAGNKKLVFNQYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 180
Db 774 WKISLNYNK---IWTLODTAGNKKLVFNQYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 833
QY 181 NLIDEKSIISNLGDIHVSNDILFKIVGCDNTRVYGVIRYKVPKFDTELKTEIETLYSDEPDP 240
Db 834 NLIDEKSIISNLGDIHVSNDILFKIVGCDNTRVYGVIRYKVPKFDTELKTEIETLYSDEPDP 893
QY 241 SILKDFWGNLYLNKRYLLNLRDTSITQNSNPLNINQORGUYQKPNIFSNTRLTYGV 300
Db 894 SILKDFWGNLYLNKRYLLNLRDTSITQNSNPLNINQORGUYQKPNIFSNTRLTYGV 953
QY 301 EVIIRKNGSTDSINTDNFVRKNDLAYINVVDREVRLYADISIAKPEKIIKIRTSNSN 360

Db 954 EVIIRKNGSTDSINTDNFVRKNDLAYINVVDREVRLYADISIAKPEKIIKIRTSNSN 1013
QY 361 NSLGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 420
Db 1014 NSLGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 1073
QY 421 FISKEHGWQEN 431
Db 1074 FISKEHGWQEN 1084

RESULT 3

US-10-909-769-28

; Sequence 28, Application US/10909769

; Publication No. US20060024331A1

; GENERAL INFORMATION:

; APPLICANT: Fernandez-Salas, Ester

; APPLICANT: Steward, Lance E.

; APPLICANT: Lin, Wei-Jen

; APPLICANT: Aoki, Kei Roger

; APPLICANT: Sachs, George

; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris

; FILE REFERENCE: ALLE0010-100 (ROI2003-146)

; CURRENT APPLICATION NUMBER: US/10/909,769

; CURRENT FILING DATE: 2004-08-02

; NUMBER OF SEQ ID NOS: 34

; SOFTWARE: Patent in version 3.3

; SEQ ID NO 28

; LENGTH: 838

; TYPE: PRT

; ORGANISM: Artificial Sequence

; FEATURE:

; OTHER INFORMATION: Amino acid sequence of HC

US-10-909-769-28

Query Match 80.1%; Score 1833; DB 6; Length 838;
Best Local Similarity 81.3%; Pred. No. 6e-127;
Matches 352; Conservative 33; Mismatches 40; Indels 8; Gaps 4;

QY 1 SYTNDKILILYFNKLYKKIKDNLDMRYENKPFIDISGYGNSISNGDVVYIYSTNRNQF 60
Db 411 SYTNDKILILYFNKLYKKIKDNLDMRYENKPFIDISGYGNSISNGDVVYIYSTNRNQF 470
QY 61 GYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 120
Db 471 GYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 530
QY 121 WKISLNYNK---IWTLODTAGNKKLVFNQYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 177
Db 531 WKISLNYNK---IWTLODTAGNKKLVFNQYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 590
QY 178 INGLNIDEKSIISNLGDIHVSNDILFKIVGCDNTRVYGVIRYKVPKFDTELKTEIETLYSDE 237
Db 591 INGLNIDEKSIISNLGDIHVSNDILFKIVGCDNTRVYGVIRYKVPKFDTELKTEIETLYSDE 650
QY 238 PDPSILKDFWGNLYLNKRYLLNLRDTSITQNSNPLNINQORGUYQKPNIFSNTRLTYGV 297
Db 651 PDPSILKDFWGNLYLNKRYLLNLRDTSITQNSNPLNINQORGUYQKPNIFSNTRLTYGV 709
QY 298 TGVEVIIRKNGSTDSINTDNFVRKNDLAYINVVDREVRLYADISIAKPEKIIKIRTSNSN 357
Db 710 TGVEVIIRKNGSTDSINTDNFVRKNDLAYINVVDREVRLYADISIAKPEKIIKIRTSNSN 765
QY 358 NSNNSIGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 417
Db 766 NSNNSIGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKNTSSNGCFWS 825
QY 418 FWSFISKEHGWQEN 430
Db 826 FWSFISKEHGWQEN 838

RESULT 4

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US-10-909-769-26
; Sequence 26, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteristic
; FILE REFERENCE: ALLE0010-100 (R012003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 26
; LENGTH: 829
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
; US-10-909-769-26

Query Match      63.7%; Score 1457.5; DB 6; Length 829;
Best Local Similarity 63.4%; Pred. No. 2e-99;
Matches 276; Conservative 72; Mismatches 70; Indels 17; Gaps 7;

QY 1 SYTDKILILYFNKLYKKIKNSILDMRYENKFKIDISGYGNSISINDGVYIYSTNRQF 60
DB 406 SYTDKILISYFNKFKFKIKSSSVLNMRYKNDKYVDTSGYDYNININGDVYKYPTNRQF 465

QY 61 GYSSKPSSEVNAIAONNDIYNGRYQNFISFWIRPKYFNK-VNLNNEYTIIDCIRNNNS 119
DB 466 GYNDKLSSEVNISQNDYIIYDNYKFNFSISFWIRPKYFNK-VNLNNEYTIIDCIRNNNS 525

QY 120 GWKISLNYNKIITWLODTAGNOKLVFNKYTOMISIDYINKWIFVTITNNLGNRIYIN 179
DB 526 GWKISLNYNKIITWLODTAGNOKLVFNKYTOMISIDYINKWIFVTITNNLGNRIYIN 585

QY 180 GNLDEKISNLGDIHVSNDILFKTVGNDTRYGIRYKPKVDFTELKTEIETLYSDEPD 239
DB 586 GNLIDKISNLGDIHVSNDILFKTVGNDTRYGIRYKPKVDFTELKTEIETLYSDEPD 645

QY 240 PSILKDFWGNLYLLNRYKYLNLRTDKSI-TQNSNPLNINQOQVYKPKNIFSNRLYT 298
DB 646 TNLKDFWGNLYLLNRYKYLNLRTDKSI-TQNSNPLNINQOQVYKPKNIFSNRLYT 700

QY 299 GVEVIIRK--NGSDTISDNTDFVRKNDLAYIN-VVDRDVEYRLYADISIAKPEKIKLIR 355
DB 701 GIKVKIQRVNNSSTN-----DNLVRKNDQVYINFLVASKTHLPFLYADTATNKETIKI-- 754

QY 356 TSNSNNSLGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNVLVASSWYNNIRKVTGSN 415
DB 755 -SSSGNRFRNQVVMNSVGNCTMNFQNNNGNIGLLGFKADTVVASTWYTYTHMRDHTSN 813

QY 416 GCFWFSFISKEHQWE 430
DB 814 GCFWFSFISKEHQWE 828

RESULT 5
US-10-909-769-18
; Sequence 18, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteristic
; FILE REFERENCE: ALLE0010-100 (R012003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769

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; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 18
; LENGTH: 849
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
; US-10-909-769-18

Query Match      49.0%; Score 1120.5; DB 6; Length 849;
Best Local Similarity 49.4%; Pred. No. 1.e-74;
Matches 219; Conservative 78; Mismatches 127; Indels 19; Gaps 7;

QY 2 YTNDKILILYFNKLYKKIKNSILDMRYENKFKIDISGYGNSISINDGVYIYSTNRQFG 61
DB 409 YVDNQRLLSTFTTEYIKNIINTSILNRYESNLIDLSRYASKINIGSKVNFDPIDKQIQ 468

QY 62 IYSSKPSSEVNAIAONNDIYNGRYQNFISFWIRPKYFNK-VNLNNEYTIIDCIRNNNSGW 121
DB 469 LFNLESSKIEVLKNAIVNYSWYENFSTFWIRPKYFNFSISLNNVEYTIINCM-ENNSGW 527

QY 122 KISLNYNKIITWLODTAGNOKLVFNKYTOMISIDYINKWIFVTITNNLGNRIYIN 181
DB 528 KVSILNYGEIITWLODTQEIQRVVFVKYSOMINISDYINRWIFVTITNNLNNSKIYINGR 587

QY 182 LIDKESISNLGDIHVSNDILFKTVGNDTRYGIRYKPKVDFTELKTEIETLYSDEPD 240
DB 588 LIDQKPSNLGDIHVSNDILFKTVGNDTRYGIRYKPKVDFTELKTEIETLYSDEPD 647

QY 241 SILKDFWGNLYLLNRYKYLNLRTDKSI-TQNSNPLNINQOQVYKPKNIFSNRL 296
DB 648 GILKDFWGNLYLLNRYKYLNLRTDKSI-TQNSNPLNINQOQVYKPKNIFSNRL 707

QY 297 YTGVEVIIRKNGSDTISDNTDFVRKNDLAYIN-VVDRDVEYRLYADISIAKPEKIKLIR 356
DB 708 YRGTKFIKKYAS---GNKDNIVRNDRVYINVVYVQNKYRLATNASQAGVEKILSALEI 764

QY 357 SNSNSNLGQIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHNSN-----LVASSWYNN 407
DB 765 PDVGN-LSQVVMVMSKNDQGITNCKMNLQNDNGDNGDIFGIFGHPFNNTAKLVASWYNNRQ 823

QY 408 IRKNTSSNGCFWFSFISKEHQWE 430
DB 824 IERSRTLGCSEWEIFVDDGWGE 846

RESULT 6
US/11/062
; Sequence 3, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 3
; LENGTH: 1067
; TYPE: PRT
; ORGANISM: Artificial Sequence

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FEATURE:
OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
US/11/062,471A-3

Query Match 49.0%; Score 1120.5; DB 7; Length 1067;
Best Local Similarity 49.4%; Pred. No. 1.4e-74;
Matches 219; Conservative 78; Mismatches 127; Indels 19; Gaps 7;

QY 2 YTNDKILILYFNKLYKKIKDNLDMRYENKFIIDISGYGNSISNGDVYIYSTNRNQF 61
DB 627 YVDNQRLSTFTEYIKNIINTSILNRYESNHLIDLRYASKINIGSKVNFDPIDKQIQ 686
QY 62 IYSSKPESEVNIQAQNDIYNGRYQNFISFWIRPKYFNKVLNNEYTIIDCIRNNNSGW 121
DB 687 LFNLESSKIEVILKNAIVYNSMYENFSTFWIRPKYFNISLNNEYTIINCW-ENNSGW 745
QY 122 KISLNYNKIITWLODTAGNQKLVFNVTOMISIDYINKWIFVTITNNRLGNSRIYING 181
DB 746 KVSILNYGHEIITWLODTQEIQRVVFYKYSQMINISDYINRWIFVTITNNRLNNSKIYING 805
QY 182 LIDKESISNLGDIHVSNDILFKIVGNDT-RYVGIRYFKVFDTELKTEIETLYSDEPDP 240
DB 806 LIDQKPIISNLGNIHASNNIMFKLDGCRDTHRYIWKYFNLFDKELNEKEIKOLDYDQNS 865
QY 241 SILKDFWGNLYLKYKRYVLLMLRTDKSITONS-----NFLNINQOQGVYQKPNIFSNTRL 296
DB 866 GILKDFWGDYLOYPKPYMLNLYDPNKYDVNNVGIKGYMYLKGPRGSVMTNIYLNSSL 925
QY 297 YTGVEVIRKNGSTDISNTDNFVRKNDLAYINNVDRDVEVRLYADISIAKPEKIKLIRT 356
DB 926 YRGTKFIILKYAS---GNKDNIVRNDRVYINNVVKNKEYRLATNASQAGVEKILSALEI 982
QY 357 SNSNNISLQIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LVASSWYNN 407
DB 983 PDVGN-LSQVVMKSKNDQGITNKCKMNLQDNGNDIGFIFGHQFNIAKLVASNNYNRQ 1041
QY 408 IRKNTSSNGCFWFSFISKEHGWQE 430
DB 1042 IERSRITLGCSEWEIFPVDGNGE 1064

RESULT 7
US/11/062
Sequence 6, Application US/11062471A
Publication No. US20050255093A1
GENERAL INFORMATION:
APPLICANT: SHONE, Clifford Charles
APPLICANT: SUTTON, John Mark
APPLICANT: HALLIS, Bassam
APPLICANT: SILMAN, Nigel
TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
FILE REFERENCE: 1581.0800001
CURRENT APPLICATION NUMBER: US/11/062,471A
CURRENT FILING DATE: 2005-02-22
PRIOR APPLICATION NUMBER: 09/831,050
PRIOR FILING DATE: 1999-11-05
PRIOR APPLICATION NUMBER: PCT/GB99/03699
PRIOR FILING DATE: 1999-11-05
PRIOR APPLICATION NUMBER: GB 9824282.9
PRIOR FILING DATE: 1998-11-05
NUMBER OF SEQ ID NOS: 11
SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 6
LENGTH: 1092
TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
US/11/062,471A-6

Query Match 49.0%; Score 1120.5; DB 7; Length 1092;
Best Local Similarity 49.4%; Pred. No. 1.4e-74;
Matches 219; Conservative 78; Mismatches 127; Indels 19; Gaps 7;

QY 2 YTNDKILILYFNKLYKKIKDNLDMRYENKFIIDISGYGNSISNGDVYIYSTNRNQF 61
DB 652 YVDNQRLSTFTEYIKNIINTSILNRYESNHLIDLRYASKINIGSKVNFDPIDKQIQ 711
QY 62 IYSSKPESEVNIQAQNDIYNGRYQNFISFWIRPKYFNKVLNNEYTIIDCIRNNNSGW 121
DB 712 LFNLESSKIEVILKNAIVYNSMYENFSTFWIRPKYFNISLNNEYTIINCW-ENNSGW 770
QY 122 KISLNYNKIITWLODTAGNQKLVFNVTOMISIDYINKWIFVTITNNRLGNSRIYING 181
DB 771 KVSILNYGHEIITWLODTQEIQRVVFYKYSQMINISDYINRWIFVTITNNRLNNSKIYING 830
QY 182 LIDKESISNLGDIHVSNDILFKIVGNDT-RYVGIRYFKVFDTELKTEIETLYSDEPDP 240
DB 831 LIDQKPIISNLGNIHASNNIMFKLDGCRDTHRYIWKYFNLFDKELNEKEIKOLDYDQNS 890
QY 241 SILKDFWGNLYLKYKRYVLLMLRTDKSITONS-----NFLNINQOQGVYQKPNIFSNTRL 296
DB 891 GILKDFWGDYLOYPKPYMLNLYDPNKYDVNNVGIKGYMYLKGPRGSVMTNIYLNSSL 950
QY 297 YTGVEVIRKNGSTDISNTDNFVRKNDLAYINNVDRDVEVRLYADISIAKPEKIKLIRT 356
DB 951 YRGTKFIILKYAS---GNKDNIVRNDRVYINNVVKNKEYRLATNASQAGVEKILSALEI 1007
QY 357 SNSNNISLQIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LVASSWYNN 407
DB 1008 PDVGN-LSQVVMKSKNDQGITNKCKMNLQDNGNDIGFIFGHQFNIAKLVASNNYNRQ 1066
QY 408 IRKNTSSNGCFWFSFISKEHGWQE 430
DB 1067 IERSRITLGCSEWEIFPVDGNGE 1089

RESULT 8
US-10-909-769-20
Sequence 20, Application US/10909769
Publication No. US20060024331A1
GENERAL INFORMATION:
APPLICANT: Fernandez-Salas, Ester
APPLICANT: Steward, Lance E.
APPLICANT: Lin, Wei-Jen
APPLICANT: Aoki, Kei Roger
APPLICANT: Sachs, George
TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteristics
FILE REFERENCE: ALLE0010-100 (R012003-146)
CURRENT APPLICATION NUMBER: US/10/909,769
CURRENT FILING DATE: 2004-08-02
NUMBER OF SEQ ID NOS: 34
SOFTWARE: PatentIn version 3.3
SEQ ID NO 20
LENGTH: 900
TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-20

Query Match 34.1%; Score 781; DB 6; Length 900;
Best Local Similarity 37.0%; Pred. No. 8.8e-50;
Matches 174; Conservative 90; Mismatches 146; Indels 60; Gaps 14;
QY 1 SYTNDKILILYFNKLYKKIKDNLDMRYENKFIIDISGYGNSISNGDVYIYSTNRNQF 60
DB 451 TYSNIEIILIKIFNKYNSSEILNLIILRYDRNNLIDLGYGAKVEYVDGKVL--NDKNQF 508
QY 61 GIYSSKPESEVNIQAQNDIYNGRYQNFISFWIRPKYFNKVLNNEYTIIDCIRNN 117
DB 509 KLTSSADSKIRVQTONQIIIFNSMFLDPSVSWIRPKYRNDIIONYIHNEYTIINCW-K-N 567
QY 118 NSGKKISLNYNKIITWLODTAGNQKLVFNVTOMISIDYINKWIFVTITNNRLGNSRIY 177
DB 568 NSGKKISIRGNRIITWLODINGKTSVFEYNEIREIDSEYINRWFFVTITNN-LDNAKIY 626

QY 178 INGNLIDKSTSNLGDHVSNDILFKVGCND-TRYVGIRYKVFDTGLGKTELETLYSD 236
 Db 627 INGLBESNMDIKDGEVINGEITFKDGDVDRQFTQWTKYFSTFNTQLQNSNIKEYKI 686
 QY 237 EPDPSILKDFMGNYLLNRYLLNL-----LRTDKSI-----TQNSNFLNIN 279
 Db 687 QSYSEYLKDFWGNPLMYNKEYYMFNAGNKNYSIKLVKDSVGEILLIRSKYNQNSNYINR 746
 QY 280 QORGYYQKPNFSTRLYTGVVEIIRKNGSTDINTDNFVRKNDLAYINNVDRDVEYELYA 339
 Db 747 -----NLYGKFIIRRESNQSIN-DDIVRKEDYIHLDLVHHEWRVY 790
 QY 340 ADISIAKPEKIIKIRTSNNSLQIIVM---DSIGNNCTMNFQNN--NGNIGLLGFH 394
 Db 791 AYKYEQEEKFLSIISDSNEFYKTEIKEDYQPSYSCOLLFKPKDEESTDDIGLIGIH 850
 QY 395 -----SNLVASSWYNNI-RKNTSSN-GCFWSPISKEHGWOE 430
 Db 851 RFYESGVLKYYKDYFCISKYKLVKEVKPKYKSNLGCNWQFIPKDEGWTE 900

RESULT 9
 US/11/062
 ; Sequence 4, Application US/11062471A
 ; Publication No. US20050255093A1
 ; GENERAL INFORMATION:
 ; APPLICANT: SHONE, Clifford Charles
 ; APPLICANT: SUTTON, John Mark
 ; APPLICANT: HALLIS, Bassem
 ; APPLICANT: SILMAN, Nigel
 ; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
 ; FILE REFERENCE: 1581.0800001
 ; CURRENT APPLICATION NUMBER: US/11/062, 471A
 ; CURRENT FILING DATE: 2005-02-22
 ; PRIOR APPLICATION NUMBER: 09/831, 050
 ; PRIOR FILING DATE: 1999-11-05
 ; PRIOR APPLICATION NUMBER: PCT/GB99/03699
 ; PRIOR FILING DATE: 1999-11-05
 ; PRIOR APPLICATION NUMBER: GB 9824282.9
 ; PRIOR FILING DATE: 1998-11-05
 ; NUMBER OF SEQ ID NOS: 11
 ; SOFTWARE: PatentIn Ver. 2.1
 ; SEQ ID NO 4
 ; LENGTH: 1070
 ; TYPE: PRT
 ; ORGANISM: Artificial Sequence
 ; FEATURE:
 ; OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker.
 US/11/062, 471A-4

Query Match 33.6%; Score 769; DB 7; Length 1070;
 Best Local Similarity 36.0%; Pred. No. 8.2e-49;
 Matches 169; Conservative 88; Mismatches 152; Indels 60; Gaps 13;
 QY 2 YTNDKILLYFNKLYKIKKONSLDMRYENKFKIDISGYGNSISINGDVYIYSTNRNPG 61
 Db 622 YTNDTILIEFMFNKYNSEILNLIILNRYKDNLDLSCYGAKVEYDGVDEL--NDKNQPK 679
 QY 62 IYSSKPSVNIQNDIIYNGRYONFSISFWVRIPKYN---KVLNNEYTIIDCIRNN 118
 Db 680 LTSSANSKIRVTQNIIFNSVFLDPSVFWIRIPKYNKDGQIYHNEYTIINCWK--NN 738
 QY 119 SGWKISLNNKIITWLDQTAGNOKLVFNQYTMISIDYINKWIFVTITNNRLGNSRIYI 178
 Db 739 SGWKISIRGNRIITWLDINGTKSVFFEYNIREDISEYINRWFFVTITNN--LNNAKIYI 797
 QY 179 NGNLIDEKSIINLGDHVSNDILFKVGCND-TRYVGIRYKVFDTGLGKTELETLYSD 237
 Db 798 NGKLESNTDKDIREVIANGELIFKLDGIDRTQFTWIKYFSTFNTQLQNSNIKEYKI 857
 QY 238 PDPSILKDFMGNYLLNRYLLNL-----LRTDKSI-----TQNSNFLNINQ 280

Db 858 SYSEYLKDFWGNPLMYNKEYYMFNAGNKNYSIKLVKDSVGEILLIRSKYNQNSNYINR 917
 QY 281 QRGVYQKPNFSTRLYTGVVEIIRKNGSTDINTDNFVRKNDLAYINNVDRDVEYELYA 340
 Db 918 -----LYIGKFIIRKSNQSIN-DDIVRKEDYIHLDPFNLAQEWRYVT 961
 QY 341 DISIAKPEKIIKIRTSNNSLQIIVM---DSIGNNCTMNFQNN--NGNIGLLGFH- 394
 Db 962 YKFKKEEKLFLAPISDSDEFYNTIQIKEYDQPTYSCOLLFKPKDEESTDEIGLIGIHR 1021
 QY 395 -----SNLVASSWYNNI-RKNTSSN-GCFWSPISKEHGWOE 430
 Db 1022 FYESGIVFEYKDYFCISKYKLVKEVKPKYKSNLGCNWQFIPKDEGWTE 1070

RESULT 10
 US/11/062
 ; Sequence 7, Application US/11062471A
 ; Publication No. US20050255093A1
 ; GENERAL INFORMATION:
 ; APPLICANT: SHONE, Clifford Charles
 ; APPLICANT: SUTTON, John Mark
 ; APPLICANT: HALLIS, Bassem
 ; APPLICANT: SILMAN, Nigel
 ; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
 ; FILE REFERENCE: 1581.0800001
 ; CURRENT APPLICATION NUMBER: US/11/062, 471A
 ; CURRENT FILING DATE: 2005-02-22
 ; PRIOR APPLICATION NUMBER: 09/831, 050
 ; PRIOR FILING DATE: 1999-11-05
 ; PRIOR APPLICATION NUMBER: PCT/GB99/03699
 ; PRIOR FILING DATE: 1999-11-05
 ; PRIOR APPLICATION NUMBER: GB 9824282.9
 ; PRIOR FILING DATE: 1998-11-05
 ; NUMBER OF SEQ ID NOS: 11
 ; SOFTWARE: PatentIn Ver. 2.1
 ; SEQ ID NO 7
 ; LENGTH: 1095
 ; TYPE: PRT
 ; ORGANISM: Artificial Sequence
 ; FEATURE:
 ; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human
 US/11/062, 471A-7

Query Match 33.6%; Score 769; DB 7; Length 1095;
 Best Local Similarity 36.0%; Pred. No. 8.5e-49;
 Matches 169; Conservative 88; Mismatches 152; Indels 60; Gaps 13;
 QY 2 YTNDKILLYFNKLYKIKKONSLDMRYENKFKIDISGYGNSISINGDVYIYSTNRNPG 61
 Db 647 YTNDTILIEFMFNKYNSEILNLIILNRYKDNLDLSCYGAKVEYDGVDEL--NDKNQPK 704
 QY 62 IYSSKPSVNIQNDIIYNGRYONFSISFWVRIPKYN---KVLNNEYTIIDCIRNN 118
 Db 705 LTSSANSKIRVTQNIIFNSVFLDPSVFWIRIPKYNKDGQIYHNEYTIINCWK--NN 763
 QY 119 SGWKISLNNKIITWLDQTAGNOKLVFNQYTMISIDYINKWIFVTITNNRLGNSRIYI 178
 Db 764 SGWKISIRGNRIITWLDINGTKSVFFEYNIREDISEYINRWFFVTITNN--LNNAKIYI 822
 QY 179 NGNLIDEKSIINLGDHVSNDILFKVGCND-TRYVGIRYKVFDTGLGKTELETLYSD 237
 Db 823 NGKLESNTDKDIREVIANGELIFKLDGIDRTQFTWIKYFSTFNTQLQNSNIKEYKI 882
 QY 238 PDPSILKDFMGNYLLNRYLLNL-----LRTDKSI-----TQNSNFLNINQ 280
 Db 883 SYSEYLKDFWGNPLMYNKEYYMFNAGNKNYSIKLVKDSVGEILLIRSKYNQNSNYINR 942
 QY 281 QRGVYQKPNFSTRLYTGVVEIIRKNGSTDINTDNFVRKNDLAYINNVDRDVEYELYA 340
 Db 943 -----LYIGKFIIRKSNQSIN-DDIVRKEDYIHLDPFNLAQEWRYVT 986
 QY 341 DISIAKPEKIIKIRTSNNSLQIIVM---DSIGNNCTMNFQNN--NGNIGLLGFH- 394

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; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford Charles
; APPLICANT: Quinn, Conrad Padraig
; APPLICANT: Foster, Keith Alan
; APPLICANT: Chaddock, John
; APPLICANT: Marks, Philip
; APPLICANT: Sutton, J. Mark
; APPLICANT: Stancombe, Patrick
; APPLICANT: Wayne, Jonathan
; TITLE OF INVENTION: Recombinant Toxin Fragments
; FILE REFERENCE: 1581.0130004
; CURRENT APPLICATION NUMBER: US/11/077,550
; CURRENT FILING DATE: 2005-03-11
; PRIOR APPLICATION NUMBER: 10/241,596
; PRIOR FILING DATE: 2002-09-12
; PRIOR APPLICATION NUMBER: 09/255,829
; PRIOR FILING DATE: 1999-02-23
; PRIOR APPLICATION NUMBER: PCT/GB97/02273
; PRIOR FILING DATE: 1997-08-22
; PRIOR APPLICATION NUMBER: 08/782,893
; PRIOR FILING DATE: 1996-12-27
; PRIOR APPLICATION NUMBER: GB9625996.5
; PRIOR FILING DATE: 1996-12-13
; PRIOR APPLICATION NUMBER: GB9617671.4
; PRIOR FILING DATE: 1996-08-23
; NUMBER OF SEQ ID NOS: 179
; SOFTWARE: Patent in version 3.1
; SEQ ID NO 20
; LENGTH: 1169
; TYPE: PRT
; ORGANISM: Clostridium botulinum
; US-11-077-550-20

Query Match 29.6%; Score 676.5; DB 7; Length 1169;
Best Local Similarity 40.6%; Pred. No. 5.5e-42;
Matches 141; Conservative 66; Mismatches 99; Indels 41; Gaps 9;

QY 2 YTNKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYSNISINGDVYIYSTNRNQFG 61
Db 843 YTNKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYSNISINGDVYIYSTNRNQFG 61
QY 62 IYSSKPESEVNTAQNNDIYNGRYQNFISFWVRPKYFN---KVNLANEYTIIDCIRNN 118
Db 901 LSSANSKRVTVQNCNLIYNSVFLDSFVSFWIRPKYKNDGIONVHREYTIINCKM--NN 959
QY 119 SGWKISLNVNKIITWLODTAGNNKLVNYSYISYINKWIFVTITNNRLGNSRIYI 178
Db 960 SGWKISIRGNRIITWLODTAGNNKLVNYSYISYINKWIFVTITNNRLGNSRIYI 178
QY 179 NGNLIDEKSISNLGDIHVSNDILFKIVGND--TRYVGIRYKVPDTLKGTEIETLYSDE 237
Db 1019 NGNLIDEKSISNLGDIHVSNDILFKIVGND--TRYVGIRYKVPDTLKGTEIETLYSDE 237
QY 238 PDPSILKDFWGNLYLLNRYLLN-----LRTDKSI-----TQNSNLFNINQ 280
Db 1079 SYSEYLDKDFWGNLYLLNRYLLN-----LRTDKSI-----TQNSNLFNINQ 280
QY 281 QRGVYQKPNISNTLYTGVVEVIRPKNGSTDISNTDNFVRKNDLAYI 327
Db 1139 QRGVYQKPNISNTLYTGVVEVIRPKNGSTDISNTDNFVRKNDLAYI 327

RESULT 13
US-10-909-769-24
; Sequence 24, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist

```

```

; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford Charles
; APPLICANT: Quinn, Conrad Padraig
; APPLICANT: Foster, Keith Alan
; APPLICANT: Chaddock, John
; APPLICANT: Marks, Philip
; APPLICANT: Sutton, J. Mark
; APPLICANT: Stancombe, Patrick
; APPLICANT: Wayne, Jonathan
; TITLE OF INVENTION: Recombinant Toxin Fragments
; FILE REFERENCE: 1581.0130004
; CURRENT APPLICATION NUMBER: US/11/077,550
; CURRENT FILING DATE: 2005-03-11
; PRIOR APPLICATION NUMBER: 10/241,596
; PRIOR FILING DATE: 2002-09-12
; PRIOR APPLICATION NUMBER: 09/255,829
; PRIOR FILING DATE: 1999-02-23
; PRIOR APPLICATION NUMBER: PCT/GB97/02273
; PRIOR FILING DATE: 1997-08-22
; PRIOR APPLICATION NUMBER: 08/782,893
; PRIOR FILING DATE: 1996-12-27
; PRIOR APPLICATION NUMBER: GB9625996.5
; PRIOR FILING DATE: 1996-12-13
; PRIOR APPLICATION NUMBER: GB9617671.4
; PRIOR FILING DATE: 1996-08-23
; NUMBER OF SEQ ID NOS: 179
; SOFTWARE: Patent in version 3.1
; SEQ ID NO 30
; LENGTH: 855
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
; US-10-909-769-30

Query Match 32.2%; Score 736.5; DB 6; Length 855;
Best Local Similarity 35.7%; Pred. No. 1.5e-46;
Matches 164; Conservative 76; Mismatches 179; Indels 41; Gaps 10;

QY 2 YTNKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYSNISINGDVYIYSTNRNQFG 61
Db 406 YTNKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYSNISINGDVYIYSTNRNQFG 61
QY 62 IYSSKPESEVNTAQNNDIYNGRYQNFISFWVRPKYFN---KVNLANEYTIIDCIRNN 118
Db 466 LNSNSNITAHQSFVVDYMSFNFVWVRPKYNNNDIOTYLNQVEYTIISCIK--ND 524
QY 119 SGWKISLNVNKIITWLODTAGNNKLVNYSYISYINKWIFVTITNNRLGNSRIYI 178
Db 525 SGWKISIRGNRIITWLODTAGNNKLVNYSYISYINKWIFVTITNNRLGNSRIYI 178
QY 179 NGNLIDEKSISNLGDIHVSNDILFKIVGND--TRYVGIRYKVPDTLKGTEIETLYSDE 237
Db 585 NGNLIDEKSISNLGDIHVSNDILFKIVGND--TRYVGIRYKVPDTLKGTEIETLYSDE 237
QY 238 PDPSILKDFWGNLYLLNRYLLN-----LRTDKSI-----TQNSNLFNINQ 289
Db 645 SSWTLKDFWGNLYLLNRYLLN-----LRTDKSI-----TQNSNLFNINQ 289
QY 290 IFSNTRYLTVGEVIRPKNGSTDISNTDNFVRKNDLAYINVD--RDVEYRLYADISIAKPE 348
Db 702 IFSNTRYLTVGEVIRPKNGSTDISNTDNFVRKNDLAYINVD--RDVEYRLYADISIAKPE 348
QY 349 KIILKIRTSNNSLGIIVWDSICNCTANFQ---NNNGCNIGLLGF----- 393
Db 756 KIILKIRTSNNSLGIIVWDSICNCTANFQ---NNNGCNIGLLGF----- 393
QY 394 -HSNNLVASSWYNNIRKNTSS--NGCFWGFISKEHGWOE 430
Db 816 -HSNNLVASSWYNNIRKNTSS--NGCFWGFISKEHGWOE 430

RESULT 12
US-11-077-550-20
; Sequence 20, Application US/11077550
; Publication No. US20050244435A1

```

FILE REFERENCE: ALLE0010-100 (ROI2003-146)
CURRENT APPLICATION NUMBER: US/10/909,769
CURRENT FILING DATE: 2004-08-02
NUMBER OF SEQ ID NOS: 34
SOFTWARE: Patent in version 3.3
SEQ ID NO 24
LENGTH: 834
TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-24

Query Match 25.4%; Score 580.5; DB 6; Length 834;
Best Local Similarity 29.4%; Pred. No. 4e-35;
Matches 140; Conservative 88; Mismatches 156; Indels 93; Gaps 13;
QY 1 SYTNDKILLYFNKLYKKIKNSILDMRYENKFKIDISGYGNSISGVDVYIYSTNRNQF 60
DB 404 SYTNNSLLKDIINEYFNSINDSKILSLQKKVALVDTSGYNAEVRVGVGNVLTITVND 463
QY 61 GYSSKPEVNIAQNNDIYGRYQNFISFWRIPKYFNKNLNEYIITDICIENNSG 120
DB 464 KL-SSSGDKIIVNLNNILYSAIYENSSVSFWIKISK--DLTNSHNEYIITINSI-EQNSG 519
QY 121 WKISLNYNKIITWLOTAGNKKLVFNQYTMISIDYINKWIFVTITNNLGNRIYING 180
DB 520 WKLCIRNGNIEILODVNRKYKSLFDYSESLSHTGYTNKFFVTITNNIMGKLYING 579
QY 181 NLIDEKSTNSLGDIIHVSNDILFKI-VGNDTRYGVIRYKFKVDTLGTETLTSYSDPDP 239
DB 580 ELKQSQKEDLDEVKLDKTIIVGIDENIDENQMLWIRDFNIFSKELSNEDINIVEGQIL 639
QY 240 PSILKDFWGNLYLLNRYLLNLLRTDKSITQNSFLNINQORGVYQKPNIFSNRLTYG 299
DB 640 RNVIKDYGNPLKFDTEYIINDYIDRYIAPESNVLV-----VOYPD---RSKLYTG 690
QY 300 VEVIR---KNGSDTSDTNDNFVK---NDLAYINVDVDRVEYRLYADISIAKEPKLIK 352
DB 691 NPITIKSVSDKNPYSKRLNGDNIILHMLYNSRKYMIIRDOT---IYA----- 735
QY 353 LIRTSNSNLSLQIIVMDSIGNNCTWNF-----QNNNGNIGLLGFHNSNLVASSWY--- 404
DB 736 -----TQGECSQNCVYALKQSLNGLNYGIGIFSIKNIIVSKNKYCQ 777
QY 405 -YNNIRKNTS-----SNGCFWFSFKSHEHGOE 430
DB 778 IFSSPRENTMLADIYKPRFSPKNAYTPVAVTNYETKILSTSPFWKFTSRDPGWVE 834

RESULT 14
US-11-077-550-141
Sequence 141, Application US/11077550
Publication No. US2005024435A1
GENERAL INFORMATION:
APPLICANT: Shone, Clifford Charles
APPLICANT: Quinn, Conrad Padraig
APPLICANT: Foster, Keith Alan
APPLICANT: Chaddock, John
APPLICANT: Marks, Philip
APPLICANT: Sutton, J. Mark
APPLICANT: Stancombe, Patrick
APPLICANT: Wayne, Jonathan
TITLE OF INVENTION: Recombinant Toxin Fragments
FILE REFERENCE: 1581.013004
CURRENT APPLICATION NUMBER: US/11/077,550
CURRENT FILING DATE: 2005-03-11
PRIOR APPLICATION NUMBER: 10/241,596
PRIOR FILING DATE: 2002-09-12
PRIOR APPLICATION NUMBER: 09/255,829
PRIOR FILING DATE: 1999-02-23
PRIOR APPLICATION NUMBER: PCT/GB97/02273
PRIOR FILING DATE: 1997-08-22

PRIOR APPLICATION NUMBER: 08/782,893
PRIOR FILING DATE: 1996-12-27
PRIOR APPLICATION NUMBER: GB9625996.5
PRIOR FILING DATE: 1996-12-13
PRIOR APPLICATION NUMBER: GB9617671.4
PRIOR FILING DATE: 1996-08-23
NUMBER OF SEQ ID NOS: 179
SOFTWARE: Patent in version 3.1
SEQ ID NO 141
LENGTH: 1315
TYPE: PRT
ORGANISM: Clostridium tetani
US-11-077-550-141

Query Match 24.2%; Score 553; DB 7; Length 1315;
Best Local Similarity 30.2%; Pred. No. 7.2e-33;
Matches 139; Conservative 92; Mismatches 151; Indels 78; Gaps 18;
QY 19 IKNSILDMRYENKFKIDISGYGNSISGVDVYIYSTNRNQFISYKSPKEVNIAQNND 77
DB 881 LKKGSTILNDINDIISDISGNSSVITYPDAQLVPGINGKAIHLVNNSESSEVIVHKAMD 940
QY 78 IYNGRYQNFISFWRIPKYFNKNL---NNEYIITDICIENNN---SGWKISLNYNK 129
DB 941 IEYNDMFNFTVSFWLRVVK-VSASHLEQYGTNEYISIISSMKHSLSIGSGMSVSLKGN 999
QY 130 IITWLOTAGNKKLVFNQYTMISID---YI-NKWFIVTITNNLGNRIYINGNLID 184
DB 1000 LIWTLKDSAGEVRQITFR-----DLPKFNAYLANKWFIITIDRLSSANLYINGVLG 1054
QY 185 EKSISNIGDIHVSNDILFKIVGC-NDTRYGVIRYKFKVDTLGTETLTSYSDPDP 243
DB 1055 SAEITGLGAIREDDNITILKDRCNQNNQYVSDIKFRIPCKALNPKEIEKLYTSVLSITFL 1114
QY 244 KDFWGNLYLLNRYLLNLLRTDKSITQNSFLN-----INQORGVYQKPNIFSNRLTYG 299
DB 1115 RDPWGNPLRYDTEYIIPVASSKDV-QLKNIITDYMVLTNAPSYTNGKLNYYR-RLYNG 1172
QY 300 VEVIRKNGSDTSDTNDNFVKNDLAYINVDVDRVEYRLYADISIAKEPKIKLIRTSNS 359
DB 1173 LKFIIR---YTPNNEISDFVKSQDF-----IKLY---VSNNNEHIVGYPKDQNA 1217
QY 360 NNSLQIIVMDSIGNNC-----TNVFNQNNNGNIGLLGFHNSNN 397
DB 1218 FNNLDRIL---RVGYNAPGIPLYKKMEAVKLRLDKLTKYTSVOLKLYDKNASLGLVGTNGQ 1274
QY 398 -----LVASSWYNNIRKNTSSNGCFWFSFKSHEHGW 428
DB 1275 IGNDPNRDLITASNWYFNHLKDKIL--GCDWYFVPTDEGW 1312

RESULT 15
US-10-909-769-22
Sequence 22, Application US/10909769
Publication No. US20060024331A1
GENERAL INFORMATION:
APPLICANT: Fernandez-Salas, Ester
APPLICANT: Steward, Lance E.
APPLICANT: Lin, Wei-Jen
APPLICANT: Aoki, Kei Roger
APPLICANT: Sachs, George
TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist
FILE REFERENCE: ALLE0010-100 (ROI2003-146)
CURRENT APPLICATION NUMBER: US/10/909,769
CURRENT FILING DATE: 2004-08-02
NUMBER OF SEQ ID NOS: 34
SOFTWARE: Patent in version 3.3
SEQ ID NO 22
LENGTH: 842
TYPE: PRT
ORGANISM: Artificial sequence
FEATURE:
OTHER INFORMATION: Amino acid sequence of HC

US-10-909-769-22

```

Query Match      23.9%; Score 546; DB 6; Length 842;
Best Local Similarity 31.5%; Pred. No. 1.4e-32;
Matches 146; Conservative 82; Mismatches 169; Indels 66; Gaps 16;

Qy 1 SYTNDKILLYFNKLYKKIKDMSILDMRYENKKEFIDISGYGSNISINGDVYIYSTNRNQF 60
Db 401 SYTNNSLKDIINEYFNNINDSKILSQNRKNTLVTDSGYNAEVSSEGDVQLNPIFPDF 460

Qy 61 GIYSS--KPSEVNTAQNNDIYNGRYQNFISFWIRIPKYPFNKYNLANNEYTIIDCIERNN 118
Db 461 KLGSSGSDRGKVIIVTQENIVYNSWYBSFSISFWIRINKWVS--NLPG-YTIIDSVK-NN 516

Qy 119 SGWKISLNYNKIWTLODTAGNQKLVFNVTOMISISDYINKWIFVTITNRLGNSRIYI 178
Db 517 SGNSIGIISNPLVFTLKQNEDESQSINFSYDISNNAPGY-NKWFVTVTNMMGNMKIYI 575

Qy 179 NGNLIDEKSIISNLGDIHVSDNILEKIVGCNDRYV-----GIRYFKVDFDELCKTE 229
Db 576 NGKLDITIKVKELTGINFSKTITEINKIPDTGLITSDSDNINMWIRDFYIFAKELDKD 635

Qy 230 IETLYSDEPDPSIILKDFWGNLYLNKRYLLNLLRTDKSITQNSNFLNINQQRGVYQKN 289
Db 636 INILFNSLQYTNVVKDYWGNDLRYNKEYVMYVNDYLNRYMYANSRQIVENTRR----- 688

Qy 290 IFSNTRYTGVEVIIRK-NGSTDISNTDNFVRKNDLAYINVVDREYRL-----YAD 341
Db 689 --NNNDFNEGYKIIIRKRGNTN---DTRVRGGDILYFDMTINNKAYNLFMKNETMYAD 742

Qy 342 -----ISIAKPEKIIKLIRTSNNSNLGQIIVMDSIGNNCTMNFQNN-NGGNI-GL 390
Db 743 NHSTEDIYALGRBQTKDI-----NDNIIFQIPMNNTYYIASQIFKSNFNGENISGI 795

Qy 391 LGPHSNL-VASSWYNNIRKNTSSNGCF-----WSFI 422
Db 796 CSICTYRFLGGDWYRHNLYVPTVKQGNYSLLSESTHMGFV 838

```

Search completed: March 2, 2006, 01:18:28
Job time : 18.5 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:31:42 ; Search time 68.993 Seconds
(without alignments)

917.057 Million cell updates/sec

Title: US-08-981-087B-2

Perfect score: 770

Sequence: 1 SYTNDKILILYFNKLYKKIK.....LNYNKIIWTQLDTAGNNOKL 144

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 2443163 seqs, 439378781 residues

Total number of hits satisfying chosen parameters: 2443163

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : A Geneseq 21:*

- 1: geneseqp1980a:*
- 2: geneseqp1990a:*
- 3: geneseqp2000a:*
- 4: geneseqp2001a:*
- 5: geneseqp2002a:*
- 6: geneseqp2003as:*
- 7: geneseqp2003bs:*
- 8: geneseqp2004a:*
- 9: geneseqp2005a:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	770	100.0	144	AAW09015	Immunogen
2	770	100.0	431	AAW09014	Immunogen
3	770	100.0	432	AAW04103	Botulinum
4	770	100.0	432	AAW04096	Botulinum
5	770	100.0	645	AAE07894	Modified
6	770	100.0	645	AAE35692	Dipt HN d
7	770	100.0	657	AAE35693	BoNT/F-Hc
8	770	100.0	657	AAE35694	BoNT/F-Hc
9	770	100.0	660	AAE07898	Modified
10	770	100.0	685	AAE07893	Modified
11	770	100.0	862	AAE07890	Modified
12	770	100.0	887	AAE07892	Modified
13	770	100.0	979	AAE35713	BoNT/F-Hc
14	770	100.0	1032	AAE07901	C. botuli
15	770	100.0	1059	AAE07901	C. botuli
16	770	100.0	1084	AAE07901	C. botuli
17	770	100.0	1092	AAE07900	C. botuli
18	770	100.0	1192	AAE35711	BoNT/F-Hc
19	770	100.0	1192	AAE35710	BoNT/F-Hc
20	767	99.6	432	AAE07901	Synthetic
21	593.5	77.1	448	AAW68399	Clostridi
22	568.5	73.8	451	AAW68395	Clostridi
23	565.5	73.4	449	AAE07901	Synthetic
24	565.5	73.4	449	AAW04094	Botulinum

25	561.5	72.9	452	2	AAW68396	Clostridi
26	537.5	69.8	419	4	AAW04095	Botulinum
27	378.5	49.2	837	3	AAE07901	Native bo
28	378.5	49.2	847	4	AAW04081	Botulinum
29	378.5	49.2	859	9	ADZ69764	Botulinum
30	378.5	49.2	1067	3	AAE07901	A mangane
31	378.5	49.2	1092	3	AAE07901	A mangane
32	378.5	49.2	1296	2	AAE07901	C. botuli
33	378.5	49.2	1296	9	ADW11038	Full leng
34	378.5	49.2	1296	9	ADZ36018	C. botuli
35	378.5	49.2	1296	9	ADZ60275	Clostridi
36	378.5	49.2	1296	9	ADZ69730	Botulinum
37	378.5	49.2	1302	9	ADZ69729	Clostridi
38	378.5	49.2	1302	9	ADZ69831	Inactive
39	377.5	49.0	848	8	ADL92142	Clostridi
40	372.5	48.4	1295	5	AAU99339	Clostridi
41	371.5	48.2	233	3	AAE07901	Native bo
42	371.5	48.2	432	3	AAE07901	Native bo
43	371.5	48.2	437	4	AAW04088	Botulinum
44	371.5	48.2	438	2	AAE07901	Type A ne
45	371.5	48.2	438	2	AAW68389	Clostridi

ALIGNMENTS

RESULT 1

AAW09015

ID AAW09015 standard; protein; 144 AA.

XX

XX AAW09015;

XX AC

DT 17-OCT-2003 (revised)

DT 31-MAR-1997 (first entry)

XX

DE Immunogenic type F botulinum toxin polypeptide (aa848-991).

XX

XX Botulinum toxin; neurotoxin; BoT/F; immunogen; vaccine; botulinum.

XX

OS Clostridium botulinum; type F strain Langeland.

XX

FN WO9641881-A1.

XX

XX 27-DEC-1996.

XX

PF 12-JUN-1996; 96WO-GB001409.

XX

PR 12-JUN-1995; 95GB-00011909.

XX

(MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX

PI Elmore MJ, Mauchline ML, Minton NP, Pasechnik VA;

XX

DR WPI; 1997-065467/06.

XX

PT Immunogenic type F botulinum toxin polypeptide(s) - allows recombinant vaccine prodn.

XX

PS Claim 5; Page 17-18; 37pp; English.

XX

CC Novel polypeptides (AAW09014-17) respectively comprise amino acids 848-1278, 848-991, 992-1135 and 1136-1278 in the heavy chain of a type F botulinum neurotoxin (BoNT/F). They lack the L chain and HN epitopes necessary for metalloprotease activity but can induce protective immunity to a type F botulinum toxin, making them useful for vaccine prodn. CC Recombinant polypeptides can be produced in transformed host cells, esp. CC as fusion proteins, e.g. with maltose binding protein to facilitate purification. (Updated on 17-OCT-2003 to standardise OS field)

SQ

Sequence 144 AA;

Query Match 100.0%; Score 770; DB 2; Length 144;

Best Local Similarity 100.0%; Pred. No. 4.2e-69; Mismatches 0; Indels 0; Gaps 0;
Matches 144; Conservative 0;

Qy 1 SYTNDKILILYFNKLYKKIKONSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
Db 1 SYTNDKILILYFNKLYKKIKONSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
Qy 61 GIYSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEYTIIDCIRNNSG 120
Db 61 GIYSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEYTIIDCIRNNSG 120
Qy 121 WKISLNYNKKIITWLTQDTAGNNQKL 144
Db 121 WKISLNYNKKIITWLTQDTAGNNQKL 144

RESULT 2
AAW09014
ID AAW09014 standard; protein; 431 AA.
XX AC AAW09014;
XX DT 17-OCT-2003 (revised)
XX DT 31-MAR-1997 (first entry)
XX DE Immunogenic type F botulinum toxin heavy chain (aa848-1278).
XX KW Botulinum toxin; neurotoxin; BoT/F; immunogen; vaccine; botulism.
XX OS Clostridium botulinum; type F strain Langeland.
XX PN WO9641881-A1.
XX PD 27-DEC-1996.
XX PF 12-JUN-1996; 96WO-GB001409.
XX PR 12-JUN-1995; 95GB-00011909.
XX PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
XX PI Elmore MJ, Mauchline ML, Minton NP, Pasechnik VA;
XX WPI; 1997-065467/06.
XX DR N-PSDB; AAT48100.
XX PT Immunogenic type F botulinum toxin polypeptide(s) - allows recombinant vaccine prodn.
XX PS Claim 5; Page 16-17; 37pp; English.

A polypeptide (AAW09014) comprises the heavy chain (amino acids 848-1278) of a type F botulinum neurotoxin (BoNT/F), and can be produced using a synthetic gene (AAT48101) based on the natural gene sequence (AAT48100) for the heavy chain. The polypeptides and its fragments (see also AAW09015-17) lack the light chain and HN epitopes necessary for metalloprotease activity and toxin internalisation. They are free of botulinum toxin activity but can induce protective immunity to a type F botulinum toxin, making them useful for vaccine prodn. Recombinant polypeptides can be produced in transfected host cells, esp. as fusion proteins, e.g. with maltose binding protein to facilitate purification. (Updated on 17-OCT-2003 to standardise OS field)

Qy 1 SYTNDKILILYFNKLYKKIKONSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
Db 1 SYTNDKILILYFNKLYKKIKONSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60

Query Match 100.0%; Score 770; DB 2; Length 431;
Best Local Similarity 100.0%; Pred. No. 1.7e-68; Mismatches 0; Indels 0; Gaps 0;
Matches 144; Conservative 0;

Qy 61 GIYSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEYTIIDCIRNNSG 120
Db 61 GIYSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEYTIIDCIRNNSG 120
Qy 121 WKISLNYNKKIITWLTQDTAGNNQKL 144
Db 121 WKISLNYNKKIITWLTQDTAGNNQKL 144

RESULT 3
AAB04103
ID AAB04103 standard; protein; 432 AA.
XX AC AAB04103;
XX DT 11-APR-2001 (first entry)
XX DE Botulism toxin heavy chain C-terminal sequence (serotype F).
XX KW Botulism; toxin; neurotoxin; heavy chain; recombinant expression;
XX KW recombinant vector; antigen; immune response; vaccine; bacterium;
XX KW infection.
XX OS Synthetic.
XX OS Clostridium botulinum.
XX PN WO200067700-A2.
XX PD 16-NOV-2000.
XX PF 12-MAY-2000; 2000WO-US012890.
XX PR 12-MAY-1999; 99US-0133865P.
XX PR 12-MAY-1999; 99US-0133866P.
XX PR 12-MAY-1999; 99US-0133867P.
XX PR 12-MAY-1999; 99US-0133868P.
XX PR 12-MAY-1999; 99US-0133869P.
XX PR 12-MAY-1999; 99US-0133873P.
XX PR 29-JUL-1999; 99US-0146192P.
XX PA (USSA) US ARMY MEDICAL RES & MATERIAL COMMAND.
XX PI Smith LA, Byrne MP, Middlebrook JL, Lapenotiere H;
XX WPI; 2001-016048/02.
XX DR N-PSDB; AAA54499.
XX PT New nucleic acids encoding the carboxy- or amino-terminal portions of the heavy chain of botulinum neurotoxin of serotype A-G, useful as vaccine against botulism.
XX PS Disclosure; Fig 18b; 73pp; English.

Botulism neurotoxins are translated as a single 150 kDa polypeptide chain and then posttranslationally nicked, forming a dichain consisting of a 100 kDa heavy chain and a 50 kDa light chain which remain linked by a disulfide bond. Nucleic acids encoding the carboxy-terminal (HC) or amino-terminal (HN) portion of the heavy chain of botulinum neurotoxin (BoNT) can be used in recombinant expression vectors and expressed in transformed cells to produce peptide antigens useful for eliciting an immune response to give protective immunity against botulinum neurotoxin, which causes botulism. The nucleic acids are expressible in a recombinant organism such as *Escherichia coli* or *Pichia pastoris*. The use of recombinant nucleic acids are advantageous since it eliminates the need to culture large quantities of hazardous toxin-producing bacterium. Production yield from the genetically engineered product is also high and cost of production is lower. The nucleic acids can be derived from Clostridium botulinum serotypes A-G

Query Match 100.0%; Score 770; DB 4; Length 432;
Best Local Similarity 100.0%; Pred. No. 1.7e-68;
Sequence 432 AA;

Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDIDISGYGNSISINGDVYIYSTNRNQF 60
Db 2 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDIDISGYGNSISINGDVYIYSTNRNQF 61
Qy 61 GYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYYTIIDCIRNNNSG 120
Db 62 GYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYYTIIDCIRNNNSG 121
Qy 121 WKISLNYNKIIWTLODTAGNNQKL 144
Db 122 WKISLNYNKIIWTLODTAGNNQKL 145

RESULT 4
AAB04096
ID AAB04096 standard; protein; 432 AA.
XX
AC AAB04096;
XX
XX
DT 11-APR-2001 (first entry)
XX
DE Botulinum toxin heavy chain C-terminal sequence (serotype F).
XX
KW Botulinum; toxin; neurotoxin; heavy chain; recombinant expression;
KW recombinant vector; antigen; immune response; vaccine; bacterium;
KW infection.
XX
XX Synthetic.
OS Clostridium botulinum.
OS
XX
XX WO200067700-A2.
XX
XX 16-NOV-2000.
XX
XX 12-MAY-2000; 2000WO-US012890.
XX
XX 12-MAY-1999; 99US-0133865P.
PR 12-MAY-1999; 99US-0133866P.
PR 12-MAY-1999; 99US-0133867P.
PR 12-MAY-1999; 99US-0133868P.
PR 12-MAY-1999; 99US-0133869P.
PR 12-MAY-1999; 99US-0133870P.
PR 12-MAY-1999; 99US-0133871P.
PR 29-JUL-1999; 99US-0146192P.
XX
XX (USSA) US ARMY MEDICAL RES & MATERIAL COMMAND.
XX
XX Smith LA, Byrne MP, Middlebrook JL, Lapenotiere H;
XX
XX WPI; 2001-016048/02.
DR N-PSDB; AAA54490.
XX
XX New nucleic acids encoding the carboxy- or amino-terminal portions of the
PT heavy chain of botulinum neurotoxin of serotype A-G, useful as vaccine
PT against botulinum.
XX
XX Claim 3; Fig 9b; 73pp; English.
XX
XX Botulinum neurotoxins are translated as a single 150 kDa polypeptide chain
CC and then posttranslationally nicked, forming a dichain consisting of a
CC 100 kDa heavy chain and a 50 kDa light chain which remain linked by a
CC disulfide bond. Nucleic acids encoding the carboxy-terminal (HC) or amino
CC -terminal (HN) portion of the heavy chain of botulinum neurotoxin (BoNT)
CC can be used in recombinant expression vectors and expressed in
CC transformed cells to produce peptide antigens useful for eliciting an
CC immune response to give protective immunity against botulinum neurotoxin,
CC which causes botulism. The nucleic acids are expressible in a recombinant
CC organisms such as Escherichia coli or Pichia pastoris. The use of
CC recombinant nucleic acids are advantageous since it eliminates the need
CC to culture large quantities of hazardous toxin-producing bacterium.
CC Production yield from the genetically engineered product is also high and
CC cost of production is lower. The nucleic acids can be derived from

CC Clostridium botulinum serotypes A-G
XX
SQ Sequence 432 AA;
Query Match 100.0%; Score 770; DB 4; Length 432;
Best Local Similarity 100.0%; Pred. No. 1.7e-68;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
Qy 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDIDISGYGNSISINGDVYIYSTNRNQF 60
Db 2 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFDIDISGYGNSISINGDVYIYSTNRNQF 61
Qy 61 GYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYYTIIDCIRNNNSG 120
Db 62 GYSSKPESEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYYTIIDCIRNNNSG 121
Qy 121 WKISLNYNKIIWTLODTAGNNQKL 144
Db 122 WKISLNYNKIIWTLODTAGNNQKL 145

RESULT 5
AAE07894
ID AAE07894 standard; protein; 645 AA.
XX
XX AAE07894;
AC
XX
DT 11-SEP-2003 (revised)
DT 01-NOV-2001 (first entry)
XX
XX Modified clostridial heavy chain fragment #1.
DE
XX
XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
KW diphtheria neurotoxin; botulinum neurotoxin type F; BoNT/F.
XX
XX Corynebacterium diphtheriae.
OS Clostridium botulinum.
OS Chimeric.
XX
XX WO200158936-A2.
XX
XX 16-AUG-2001.
XX
XX 04-DEC-2000; 2000WO-GB004644.
XX
XX 02-DEC-1999; 99GB-00028530.
PR 07-APR-2000; 2000GB-00008658.
XX
XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
XX
XX Shone CC, Sutton JM, Silman N;
XX
XX WPI; 2001-514643/56.
XX
XX New non toxic polypeptide for delivery of a therapeutic agent for the
PT treatment of a CNS disorder comprising a binding domain that translocates
PT the therapeutic agent into the neuronal cells.
XX
XX Example 2; Page 44; 50pp; English.
PS
XX The invention relates to a non toxic polypeptide, for delivery of a
CC therapeutic agent to a neuronal cell, which comprises a binding domain as
CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
CC HC) that binds to the neuronal cell and a translocation domain (amino
CC terminal half of HC, designated as HN), that translocates the therapeutic
CC agent into the neuronal cell, where the translocation domain is not a HN
CC domain of a clostridial neurotoxin and is not a fragment or derivative of
CC a HN domain of a clostridial toxin. Polypeptides of the invention are
CC useful for the treatment of a disease state associated with neuronal
CC cells. The polypeptide constructs are useful for delivering therapeutic
CC substances to neuronal cells. They are useful to treat disorders of the
CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours

CC and infection. They are also useful in gene therapy. The present sequence
 CC is modified clostridial heavy chain fragment. This sequence is
 CC constructed by fusing the binding domain of botulinum neurotoxin type F
 CC (BoNT/F) with translocation domain of diphtheria neurotoxin. (Updated on
 CC 11-SEP-2003 to standardise OS field)

XX Sequence 645 AA;

Query Match 100.0%; Score 770; DB 4; Length 645;
 Best Local Similarity 100.0%; Pred. No. 2.9e-68;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILILYFNKLYKKIKDMSILDYENKFKDISGYSNISINGDVYIYSTNRNQF 60
 DB 215 SYTNDKILILYFNKLYKKIKDMSILDYENKFKDISGYSNISINGDVYIYSTNRNQF 274
 QY 61 GYSSKPSSEVNTAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 120
 DB 275 GYSSKPSSEVNTAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 334
 QY 121 WKISLNYNKIIWTLDQTAGNNOKL 144
 DB 335 WKISLNYNKIIWTLDQTAGNNOKL 358

RESULT 6

AAE35692
 ID AAE35692 standard; protein; 645 AA.

AC AAE35692;

DT 23-OCT-2003 (revised)

DT 17-JUN-2003 (first entry)

XX Dipt HN domain-BoNT/F-Hc fusion construct.

DE Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
 KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
 KW translocation domain; HN domain; Dipt; Hc; botulinum type F neurotoxin;
 KW binding domain; BoNT/F.

OS Corynebacterium diphtheriae.
 OS Clostridium botulinum.
 OS Chimeric.

FN WO200296467-A2.

PN 05-DEC-2002.

XX 21-MAY-2002; 2002WO-GB002384.

XX 24-MAY-2001; 2001GB-00012687.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Sutton JM, Shone CC;

XX WPI; 2003-167247/16.

XX Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.

XX Example 12; Page 57-60; 130pp; English.

PS The invention relates to a conjugate comprising an injected bacterial
 CC effector protein and a carrier that targets the effector protein to a
 CC target cell. Pharmaceutical composition of the invention is useful for a
 CC treatment selected from promoting or inhibiting survival of cells;
 CC preventing and reversing damage to cells; killing cells; promoting or
 CC inhibiting the growth of cells, apoptosis, release of an inflammatory

CC mediator from cells, division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating Prion disease, Alzheimer' disease and wide range of disorders
 CC including muscle spasms such as blepharospasm, torticollis and
 CC hypersecretion disorders such as chronic obstructive pulmonary disease
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
 CC domain (Dip-HN domain) and botulinum type F neurotoxin from Clostridium
 CC botulinum. This sequence is used in the exemplification of the invention.
 CC (Updated on 23-OCT-2003 to standardise OS field)

XX Sequence 645 AA;

Query Match 100.0%; Score 770; DB 6; Length 645;
 Best Local Similarity 100.0%; Pred. No. 2.9e-68;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILILYFNKLYKKIKDMSILDYENKFKDISGYSNISINGDVYIYSTNRNQF 60
 DB 215 SYTNDKILILYFNKLYKKIKDMSILDYENKFKDISGYSNISINGDVYIYSTNRNQF 274
 QY 61 GYSSKPSSEVNTAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 120
 DB 275 GYSSKPSSEVNTAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 334
 QY 121 WKISLNYNKIIWTLDQTAGNNOKL 144
 DB 335 WKISLNYNKIIWTLDQTAGNNOKL 358

RESULT 7

AAE35693
 ID AAE35693 standard; protein; 657 AA.

AC AAE35693;

DT 17-JUN-2003 (first entry)

XX BoNT/F-Hc-Dipt HN domain-thrombin linker fusion construct.

DE Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
 KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
 KW BoNT/F; translocation domain; HN domain; Dipt; Hc; binding domain;
 KW botulinum type F neurotoxin.

XX Corynebacterium diphtheriae.

OS Clostridium botulinum.

OS Unidentified.

OS Chimeric.

PN WO200296467-A2.

XX 05-DEC-2002.

XX 21-MAY-2002; 2002WO-GB002384.

XX 24-MAY-2001; 2001GB-00012687.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Sutton JM, Shone CC;

XX WPI; 2003-167247/16.

XX Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.

[illegible]

PN WO200158936-A2.
 XX 16-AUG-2001.
 XX 04-DEC-2000; 2000WO-GB004644.
 XX 02-DEC-1999; 99GB-00028530.
 XX 07-APR-2000; 2000GB-00008658.
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX Shone CC, Sutton JM, Silman N;
 XX WPI; 2001-514643/56.
 XX New non toxic polypeptide for delivery of a therapeutic agent for the
 PT treatment of a CNS disorder comprising a binding domain that translocates
 PT the therapeutic agent into the neuronal cells.
 XX Example 2; Page 46; 50pp; English.
 XX The invention relates to a non toxic polypeptide, for delivery of a
 CC therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 CC Hc) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial neurotoxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. The polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful to treat disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence
 CC is modified clostridial heavy chain fragment. This sequence is
 CC constructed by fusing the binding domain which is a hybrid of botulinum
 CC neurotoxin type F (BoNT/F) and tetanus neurotoxin (TeNT) domain II with
 CC translocation domain of diphtheria neurotoxin. (Updated on 11-SEP-2003 to
 CC standardise OS field)
 XX SQ Sequence 660 AA;

Query Match 100.0%; Score 770; DB 4; Length 660;
 Best Local Similarity 100.0%; Pred. No. 3e-68;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKPFIDISGYGNSISINGDVYIYSTNRNQF 60
 DB 215 SYTNDKILILYFNKLYKKIKDINSILDMRYENKPFIDISGYGNSISINGDVYIYSTNRNQF 274
 QY 61 GIYSSKPESEVNIAQNNDIYNGRYQNFSPWVRIPKYPKVNKNLNEYTIIDCIRNNSG 120
 DB 275 GIYSSKPESEVNIAQNNDIYNGRYQNFSPWVRIPKYPKVNKNLNEYTIIDCIRNNSG 334
 QY 121 WKISLNYNKLIWTLDQTAGNNQKL 144
 DB 335 WKISLNYNKLIWTLDQTAGNNQKL 358

RESULT 10
 AAE07893
 ID AAE07893 standard; protein; 685 AA.
 AC AAE07893;
 XX 01-NOV-2001 (first entry)
 DT Modified clostridial heavy chain-superoxide dismutase conjugate #5.
 DE Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
 KW superoxide dismutase; SOD; botulinum neurotoxin type F; BoNT/F.
 XX

OS Geobacillus stearothermophilus.
 OS Influenza virus.
 OS Clostridium botulinum.
 OS Synthetic.
 OS Chimeric.
 XX WO200158936-A2.
 XX 16-AUG-2001.
 XX 04-DEC-2000; 2000WO-GB004644.
 XX 02-DEC-1999; 99GB-00028530.
 XX 07-APR-2000; 2000GB-00008658.
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX Shone CC, Sutton JM, Silman N;
 XX WPI; 2001-514643/56.

XX New non toxic polypeptide for delivery of a therapeutic agent for the
 PT treatment of a CNS disorder comprising a binding domain that translocates
 PT the therapeutic agent into the neuronal cells.

XX Example 9; Page 43; 50pp; English.

XX The invention relates to a non toxic polypeptide, for delivery of a
 CC therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 CC Hc) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial neurotoxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. The polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful to treat disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence
 CC is modified clostridial heavy chain-superoxide dismutase conjugate. This
 CC conjugate comprises bacterial Mn-superoxide dismutase (MnSOD), from
 CC Bacillus stearothermophilus, linker that can be cleaved by factor Xa,
 CC translocation peptide from influenza virus and a neuronal cell-specific
 CC binding domain from botulinum neurotoxin type F (BoNT/F)

XX SQ Sequence 685 AA;

Query Match 100.0%; Score 770; DB 4; Length 685;
 Best Local Similarity 100.0%; Pred. No. 3.2e-68;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKPFIDISGYGNSISINGDVYIYSTNRNQF 60
 DB 255 SYTNDKILILYFNKLYKKIKDINSILDMRYENKPFIDISGYGNSISINGDVYIYSTNRNQF 314
 QY 61 GIYSSKPESEVNIAQNNDIYNGRYQNFSPWVRIPKYPKVNKNLNEYTIIDCIRNNSG 120
 DB 315 GIYSSKPESEVNIAQNNDIYNGRYQNFSPWVRIPKYPKVNKNLNEYTIIDCIRNNSG 374
 QY 121 WKISLNYNKLIWTLDQTAGNNQKL 144
 DB 375 WKISLNYNKLIWTLDQTAGNNQKL 398

RESULT 11
 AAE07890
 ID AAE07890 standard; protein; 862 AA.
 XX AAE07890;
 AC AAE07890;
 XX 01-NOV-2001 (first entry)
 DT
 XX

DE Modified clostridial heavy chain-superoxide dismutase conjugate #2.
XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
KW superoxide dismutase; SOD; diphtheria neurotoxin;
KW botulinum neurotoxin type F; BoNT/F.
XX Geobacillus stearothermophilus.
OS Corynebacterium diphtheriae.
OS Clostridium botulinum.
OS Synthetic.
OS Chimeric.
XX WO200158936-A2.
XX 16-AUG-2001.
XX 04-DEC-2000; 2000WO-GB004644.
XX 02-DEC-1999; 99GB-00028530.
PR 07-APR-2000; 2000GB-00008658.
XX (MCCR-) MICROBIOLOGICAL RES AUTHORITY.
XX Shone CC, Sutton JM, Silman N;
XX WPI; 2001-514643/56.
XX New non toxic polypeptide for delivery of a therapeutic agent for the
PT treatment of a CNS disorder comprising a binding domain that translocates
PT the therapeutic agent into the neuronal cells.
XX Example 9; Page 40; 50pp; English.
XX The invention relates to a non toxic polypeptide, for delivery of a
CC therapeutic agent to a neuronal cell, which comprises a binding domain
CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
CC HC) that binds to the neuronal cell and a translocation domain (amino
CC terminal half of HC, designated as HN), that translocates the therapeutic
CC agent into the neuronal cell, where the translocation domain is not a HN
CC domain of a clostridial neurotoxin and is not a fragment or derivative of
CC a HN domain of a clostridial toxin. Polypeptides of the invention are
CC useful for the treatment of a disease state associated with neuronal
CC cells. The polypeptide constructs are useful for delivering therapeutic
CC substances to neuronal cells. They are useful to treat disorders of the
CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
CC and infection. They are also useful in gene therapy. The present sequence
CC is modified clostridial heavy chain-superoxide dismutase conjugate. This
CC conjugate comprises bacterial Mn-superoxide dismutase (MnSOD), from
CC Bacillus stearothermophilus, linker that can be cleaved by factor Xa,
CC translocation domain from diphtheria neurotoxin and a neuronal cell-
CC specific binding domain from botulinum neurotoxin type F (BoNT/F)
XX Sequence 862 AA;
SQ

Query Match 100.0%; Score 770; DB 4; Length 862;
Best Local Similarity 100.0%; Pred. No. 4.2e-68;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 SYTNDKILILYFNKLYKKIKDMSILDMEYENKFKIDISGYSNLSINGDVYIYSTNRQF 60
DB 432 SYTNDKILILYFNKLYKKIKDMSILDMEYENKFKIDISGYSNLSINGDVYIYSTNRQF 491
QY 61 GYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNETIIDCIRNNSG 120
DB 492 GYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNETIIDCIRNNSG 551
QY 121 WKISLNNYKIIWTLDQTAGNOKL 144
DB 552 WKISLNNYKIIWTLDQTAGNOKL 575
RESULT 12

AAE07892
ID AAE07892 standard; protein; 887 AA.
XX
AC AAE07892;
XX
DT 01-NOV-2001 (first entry)
XX
DE Modified clostridial heavy chain-superoxide dismutase conjugate #4.
XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
KW superoxide dismutase; SOD; diphtheria neurotoxin; human;
KW botulinum neurotoxin type F; BoNT/F.
XX Homo sapiens.
OS Geobacillus stearothermophilus.
OS Corynebacterium diphtheriae.
OS Clostridium botulinum.
OS Synthetic.
OS Chimeric.
XX WO200158936-A2.
XX 16-AUG-2001.
XX 04-DEC-2000; 2000WO-GB004644.
XX 02-DEC-1999; 99GB-00028530.
PR 07-APR-2000; 2000GB-00008658.
XX (MCCR-) MICROBIOLOGICAL RES AUTHORITY.
XX Shone CC, Sutton JM, Silman N;
XX WPI; 2001-514643/56.
XX New non toxic polypeptide for delivery of a therapeutic agent for the
PT treatment of a CNS disorder comprising a binding domain that translocates
PT the therapeutic agent into the neuronal cells.
XX Example 9; Page 42; 50pp; English.
XX The invention relates to a non toxic polypeptide, for delivery of a
CC therapeutic agent to a neuronal cell, which comprises a binding domain
CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
CC HC) that binds to the neuronal cell and a translocation domain (amino
CC terminal half of HC, designated as HN), that translocates the therapeutic
CC agent into the neuronal cell, where the translocation domain is not a HN
CC domain of a clostridial neurotoxin and is not a fragment or derivative of
CC a HN domain of a clostridial toxin. Polypeptides of the invention are
CC useful for the treatment of a disease state associated with neuronal
CC cells. The polypeptide constructs are useful for delivering therapeutic
CC substances to neuronal cells. They are useful to treat disorders of the
CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
CC and infection. They are also useful in gene therapy. The present sequence
CC is modified clostridial heavy chain-superoxide dismutase conjugate. This
CC conjugate comprises a mitochondrial leader sequence from human Mn-
CC superoxide dismutase (MnSOD), MnSOD from Bacillus stearothermophilus,
CC linker that can be cleaved by thrombin, translocation domain from
CC diphtheria neurotoxin and a neuronal cell-specific binding domain from
CC botulinum neurotoxin type F (BoNT/F)
XX Sequence 887 AA;
SQ

Query Match 100.0%; Score 770; DB 4; Length 887;
Best Local Similarity 100.0%; Pred. No. 4.4e-68;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 SYTNDKILILYFNKLYKKIKDMSILDMEYENKFKIDISGYSNLSINGDVYIYSTNRQF 60
DB 457 SYTNDKILILYFNKLYKKIKDMSILDMEYENKFKIDISGYSNLSINGDVYIYSTNRQF 516
QY 61 GYSSKPSSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNETIIDCIRNNSG 120

DB 517 GYSSKPEVNTAQNNDIYNGRYQNFISFWVRIPKYNKVLNANEYTIIDCIRNNSG 576
 QY 121 WKISLNYNKIIWTLDQTAGNNQKL 144
 DB 577 WKISLNYNKIIWTLDQTAGNNQKL 600

RESULT 13
 ID AAE35713 standard; protein; 979 AA.
 AC AAE35713;
 XX 17-JUN-2003 (first entry)
 DT
 DE BoNT/F-Hc-DipT HN domain-factor Xa linker-YoPT protein fusion construct.
 KW Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 KW infection; prion disease; Alzheimer' disease; hypersecretion disorder;
 KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
 KW BoNT/F; translocation domain; HN domain; DipT; Hc; binding domain;
 KW botulinum type F neurotoxin; targeted effector protein; YoPT.
 XX
 OS Corynebacterium diphtheriae.
 OS Clostridium botulinum.
 OS Yersinia pestis.
 OS Unidentified.
 OS Chimeric.
 XX
 PN WO200296467-A2.
 XX
 XX 05-DEC-2002.
 XX
 XX 21-MAY-2002; 2002WO-GB002384.
 XX
 XX 24-MAY-2001; 2001GB-00012687.
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX
 PI Sutton JM, Shone CC;
 XX
 DR WPI; 2003-167247/16.
 XX
 XX Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.
 XX
 PS Example 12; Page 110-114; 130pp; English.
 XX
 CC The invention relates to a conjugate comprising an injected bacterial
 CC effector protein and a carrier that targets the effector protein to a
 CC target cell. Pharmaceutical composition of the invention is useful for a
 CC treatment selected from promoting or inhibiting survival of cells;
 CC preventing and reversing damage to cells; killing cells; promoting or
 CC inhibiting the growth of cells; apoptosis; release of an inflammatory
 CC mediator from cells; division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating prion disease, Alzheimer' disease and wide range of disorders
 CC including muscle spasms such as blepharospasm, torticollis and
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
 CC domain (DipT-HN domain), botulinum type F neurotoxin binding domain
 CC (BoNT/F-Hc) from Clostridium botulinum and factor Xa linker peptide and
 CC Yersinia pestis targeted effector protein YoPT. This sequence is used in
 CC the exemplification of the invention
 XX

SQ Sequence 979 AA;
 Query Match 100.0%; Score 770; DB 6; Length 979;
 Best Local Similarity 100.0%; Pred. NO. 5e-68;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILILYFNKLYKKIKDINSILDNRKENNFIDISGYGSINISINGDVYIYSTNRNQF 60
 DB 549 SYTNDKILILYFNKLYKKIKDINSILDNRKENNFIDISGYGSINISINGDVYIYSTNRNQF 608
 QY 61 GIYSSKPEVNTAQNNDIYNGRYQNFISFWVRIPKYNKVLNANEYTIIDCIRNNSG 120
 DB 609 GIYSSKPEVNTAQNNDIYNGRYQNFISFWVRIPKYNKVLNANEYTIIDCIRNNSG 668
 QY 121 WKISLNYNKIIWTLDQTAGNNQKL 144
 DB 669 WKISLNYNKIIWTLDQTAGNNQKL 692

RESULT 14
 AAE07901
 ID AAE07901 standard; protein; 1032 AA.
 XX AAE07901;
 AC AAE07901;
 XX 01-NOV-2001 (first entry)
 DT
 DE C. botulinum C2 translocation domain with BoNT/F-binding domain #2.
 XX
 KW Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 KW tumour; infection; neurodegenerative disease; gene therapy;
 KW botulinum neurotoxin type F; BoNT/F.
 XX
 OS Clostridium botulinum.
 XX
 PN WO200158936-A2.
 XX
 XX 16-AUG-2001.
 XX
 XX 04-DEC-2000; 2000WO-GB004644.
 XX
 XX 02-DEC-1999; 99GB-00028530.
 XX
 XX 07-APR-2000; 2000GB-00008658.
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX
 PI Shone CC, Sutton JM, Silman N;
 XX
 DR WPI; 2001-514643/56.
 XX
 XX New non toxic polypeptide for delivery of a therapeutic agent for the
 XX treatment of a CNS disorder comprising a binding domain that translocates
 XX the therapeutic agent into the neuronal cells.
 XX
 PS Example 2; Page 48; 50pp; English.
 XX
 CC The invention relates to a non toxic polypeptide, for delivery of a
 CC therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 CC Hc) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial neurotoxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. The polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful to treat disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence
 CC is C. botulinum C2 enterotoxin translocation domain with botulinum
 CC neurotoxin type F (BoNT/F) binding domain used in the exemplification of
 CC the invention
 XX

SQ Sequence 1032 AA;
 Query Match 100.0%; Score 770; DB 4; Length 1032;
 Best Local Similarity 100.0%; Pred. No. 5.4e-68;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
 DB 602 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 661
 QY 61 GIYSSKPEVNIAQNNDIYNGRYONFSISFWVRIPKYPFNKVNLNNEYTIIDCIRNNNSG 120
 DB 662 GIYSSKPEVNIAQNNDIYNGRYONFSISFWVRIPKYPFNKVNLNNEYTIIDCIRNNNSG 721
 QY 121 WKISLNYNKIIWTLODTAGNNQKL 144
 DB 722 WKISLNYNKIIWTLODTAGNNQKL 745

RESULT 15
 AAY93309
 ID AAY93309 standard; protein; 1059 AA.
 XX
 AC AAY93309;
 DT 04-SEP-2000 (first entry)
 DE A manganese superoxide dismutase (Mn-SOD) construct.
 XX
 KW Manganese superoxide dismutase; Mn-SOD; SOD; neuronal cell;
 KW neuronal cell targeting component; NCTC; neuronal disease;
 KW oxidative stress; ischemic stroke; trauma; Parkinson's disease;
 KW Huntington's disease; motor neurone disease;
 KW botulinum neurotoxin serotype F.
 XX
 OS Synthetic.
 OS Geobacillus stearothermophilus.
 OS Clostridium botulinum.
 XX
 XX WO200028041-A1.
 XX
 PD 18-MAY-2000.
 XX
 XX PF 05-NOV-1999; 99WO-GB003699.
 XX
 XX PR 05-NOV-1998; 98GB-00024282.
 XX
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX
 XX PI Shone CC; Sutton JM, Hallis B, Silman N;
 XX
 XX WPI; 2000-376553/32.
 XX
 XX Novel composition, comprising superoxide dismutase linked by a cleavable
 XX linker to a neuronal cell targeting component useful for delivering
 XX superoxide dismutase to neuronal cells to treat ischemia.
 XX
 XX Disclosure; Page 48-51; 65pp; English.
 XX
 XX The present sequence represents a construct of the invention, comprising
 XX a manganese superoxide dismutase (Mn-SOD) polypeptide, a linker that can
 XX be cleaved by thrombin, and a heavy chain derived from botulinum
 XX neurotoxin serotype F. The specification describes a composition for
 XX delivery of SOD to neuronal cells. The composition comprises SOD linked,
 XX by a cleavable linker, to a neuronal cell targeting component (NCTC).
 XX This component has a domain that binds to a neuronal cell and a domain
 XX that translocates the SOD of the composition into the neuronal cell.
 XX After translocation, the linker is cleaved to release the SOD. The
 XX composition is useful for treating neuronal diseases caused or augmented
 XX by oxidative stress, such as ischemic stroke, trauma, Parkinson's
 XX disease, Huntington's disease and motor neurone diseases
 XX
 XX Sequence 1059 AA;

Query Match 100.0%; Score 770; DB 3; Length 1059;
 Best Local Similarity 100.0%; Pred. No. 5.5e-68;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 60
 DB 629 SYTNDKILILYFNKLYKKIKDINSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQF 688
 QY 61 GIYSSKPEVNIAQNNDIYNGRYONFSISFWVRIPKYPFNKVNLNNEYTIIDCIRNNNSG 120
 DB 689 GIYSSKPEVNIAQNNDIYNGRYONFSISFWVRIPKYPFNKVNLNNEYTIIDCIRNNNSG 748
 QY 121 WKISLNYNKIIWTLODTAGNNQKL 144
 DB 749 WKISLNYNKIIWTLODTAGNNQKL 772

Search completed: March 2, 2006, 00:38:55
 Job time : 68.993 secs

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Result No.	Query %			DB	ID	Description
	Score	Match	Length			
1	770	100.0	366	2	S48110	neurotoxin type F
2	626.5	81.4	369	2	S48109	neurotoxin type F
3	626.5	81.4	1274	2	I40813	neurotoxin type F
4	625	81.2	1268	2	S33411	botulinum neurotoxin
5	571.5	74.2	367	2	S48106	neurotoxin type E
6	571.5	74.2	1252	2	S21178	botulinum neurotoxin
7	568.5	73.8	1251	2	JH0256	botulinum neurotoxin
8	378.5	49.2	1296	1	BTCLAB	bontoxilysin (EC 3)
9	377.5	49.0	1296	2	I40645	botulinum neurotoxin
10	355	46.1	1291	1	A48940	bontoxilysin (EC 3)
11	348	45.2	1291	2	I40631	non-proteolytic botulinum neurotoxin
12	319	41.4	1297	2	S39791	neurotoxin - Clostridium botulinum
13	250	32.5	1291	2	A49777	botulinum neurotoxin
14	250	32.5	1291	2	S46431	botulinum neurotoxin
15	249.5	32.4	1276	2	S11455	botulinum neurotoxin
16	244	31.7	1285	2	S70582	botulinum neurotoxin
17	206	26.8	1315	1	BTCLRN	tentoxilysin (EC 3)
18	201	26.1	122	2	A53878	type E neurotoxin
19	125	16.2	1162	2	I40817	botulinum toxin non-toxic
20	117	15.2	480	2	B45600	asparagine-rich botulinum toxin
21	115	14.9	1196	2	UQ1467	toxin, nontoxic component
22	115	14.9	1196	2	S46430	botulinum neurotoxin
23	114	14.8	1162	2	A47708	progenitor toxin non-toxic
24	113	14.7	1193	2	S68218	botulinum neurotoxin
25	111.5	14.5	457	2	C82911	hypothetical protein
26	111.5	14.5	743	2	T38983	probable gtpase activating protein
27	110	14.3	1193	2	JC4901	non-toxic-nonhemagglutinating
28	105	13.6	430	2	T28318	ORF MSV157 hypothesis
29	100.5	13.1	464	1	MNVUWC	nonstructural protein

Query Match 81.4%; Score 626.5; DB 2; Length 369;
Best Local Similarity 80.3%; Pred. No. 9.6e-43;
Matches 118; Conservative 14; Mismatches 12; Indels 3; Gaps 1;
QY 1 SYTNDKILILYFNKLYKKIKDSSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 60
Db 214 SYTNDKILILYFNKLYKKIKDSSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 273
QY 61 GYSSKSPSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNNEYTIIDCIRNNNSG 120
Db 274 GYNSRLSEVNIAQNNDIYNSRYQNFISFWVRIPKYPKFNKVLNNNEYTIIDCIRNNNSG 333
QY 121 WKISLNYNK---IIWTLODTAGNNOKL 144
Db 334 WKISLRTVRDCEIITWTLODTAGNNOKL 360
RESULT 3
140813
neurotoxin type F - Clostridium botulinum
C/Species: Clostridium botulinum
C/Date: 16-Aug-1996 #sequence_revision 16-Aug-1996 #text_change 09-Jul-2004
C/Accession: I40813; S48108
R;East, A.K.; Richardson, P.T.; Allaway, D.; Collins, M.D.; Roberts, T.A.; Thompson, D.H.
FEMS Microbiol. Lett. 96, 225-230, 1992
A/Title: Sequence of the gene encoding type F neurotoxin of Clostridium botulinum.
A/Reference number: I40644
A/Accession: I40813
A/Status: preliminary; translated from GB/EMBL/DBJ
A/Molecule type: DNA
A/Residues: 1-1274 <RES>
A/Cross-references: UNIPROT:P30996; UNIPARC:UPI0000012688A; GB:M92906; NID:g144866; PIDN:
R;Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A/Title: Gene probes for identification of the botulin neurotoxin gene and specific id
A/Reference number: S48103; MUID:94013372; PMID:8408542
A/Accession: S48108
A/Status: preliminary; translation not shown
A/Molecule type: DNA
A/Residues: 634-1002 <CAM>
A/Cross-references: UNIPARC:UPI000016EA7B; EMBL:X70816; NID:g407788; PIDN:CAA50147.1; PI
C/Superfamily: tetanus toxin
C/Keywords: neurotoxin
Query Match 81.4%; Score 626.5; DB 2; Length 1274;
Best Local Similarity 80.3%; Pred. No. 4e-42;
Matches 118; Conservative 14; Mismatches 12; Indels 3; Gaps 1;
QY 1 SYTNDKILILYFNKLYKKIKDSSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 60
Db 847 SYTNDKILILYFNKLYKKIKDSSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 906
QY 61 GYSSKSPSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNNEYTIIDCIRNNNSG 120
Db 907 GYNSRLSEVNIAQNNDIYNSRYQNFISFWVRIPKYPKFNKVLNNNEYTIIDCIRNNNSG 966
QY 121 WKISLNYNK---IIWTLODTAGNNOKL 144
Db 967 WKISLRTVRDCEIITWTLODTAGNNOKL 993
RESULT 4
S33411
botulinum neurotoxin type F - Clostridium barati
C/Species: Clostridium barati
C/Date: 13-Jan-1995 #sequence_revision 13-Jan-1995 #text_change 09-Jul-2004
C/Accession: S33411; S31860
R;Thompson, D.E.; Hutson, R.A.; East, A.K.; Allaway, D.; Collins, M.D.; Richardson, P.T.
FEMS Microbiol. Lett. 108, 175-182, 1993
A/Title: Nucleotide sequence of the gene coding for Clostridium barati type F neurotoxin
A/Reference number: S33411; MUID:93252228; PMID:8486245
A/Accession: S33411

A/Status: preliminary
A/Molecule type: DNA
A/Residues: 1-1268 <THO>
A/Cross-references: UNIPROT:Q45851; UNIPARC:UPI000000BAF8C; EMBL:X68262; NID:g49138; PIDN:
C/Superfamily: tetanus toxin
C/Keywords: neurotoxin
Query Match 81.2%; Score 625; DB 2; Length 1268;
Best Local Similarity 81.1%; Pred. No. 5.2e-42;
Matches 116; Conservative 11; Mismatches 16; Indels 0; Gaps 0;
QY 2 YTNDKILILYFNKLYKKIKDSSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 61
Db 840 YTNDKILILYFNKLYKKIKDSSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 899
QY 62 IYSSKSPSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNKVLNNNEYTIIDCIRNNNSG 121
Db 900 IYSSRLSEVNITQNTIYNSRYQNFISFWVRIPKYPKFNKVLNNNEYTIIDCIRNNNSG 959
QY 122 KISLNYNKIIWTLODTAGNNOKL 144
Db 960 KISLNYNKIIWTLODTAGNNOKL 982
RESULT 5
S48106
neurotoxin type E - Clostridium botulinum (fragment)
C/Species: Clostridium botulinum
C/Date: 14-Jul-1995 #sequence_revision 10-Nov-1995 #text_change 09-Jul-2004
C/Accession: S48106
R;Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A/Title: Gene probes for identification of the botulin neurotoxin gene and specific id
A/Reference number: S48103; MUID:94013372; PMID:8408542
A/Accession: S48106
A/Status: preliminary; nucleic acid sequence not shown; translation not shown
A/Molecule type: DNA
A/Residues: 1-367 <CAM>
A/Cross-references: UNIPROT:Q45861; UNIPARC:UPI0000084F3D; EMBL:X70818; NID:g407784; PI
C/Note: the nucleotide sequence was submitted to the EMBL Data Library, January 1993
C/Superfamily: tetanus toxin
C/Keywords: neurotoxin
Query Match 74.2%; Score 571.5; DB 2; Length 367;
Best Local Similarity 71.7%; Pred. No. 2.3e-38;
Matches 104; Conservative 25; Mismatches 15; Indels 1; Gaps 1;
QY 1 SYTNDKILILYFNKLYKKIKDSSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 60
Db 214 SYTDDKILISYFNKFFKRIKSSVLNRYKNDKVTGSDYDSNININGDVYKPTKNQF 273
QY 61 GYSSKSPSEVNIAQNNDIYNGRYQNFISFWVRIPKYPKFNK-VLNNEYTIIDCIRNNNS 119
Db 274 GYNDKXLSVNIQNDYIYNDKYNFISFWVRIPKYPKFNKIVNVNNEYTIIDCIRNNNS 333
QY 120 GWKISLNYNKIIWTLODTAGNNOKL 144
Db 334 GWKISLNYNKIIWTLODTAGNNOKL 358
RESULT 6
S21178
botulinum neurotoxin type E precursor - Clostridium botulinum
C/Species: Clostridium botulinum
C/Date: 30-Sep-1993 #sequence_revision 30-Sep-1993 #text_change 31-Dec-2004
C/Accession: S21178; S48107; JH0257; B35294; AG0027; S1811
R;Whelan, S.M.; Elmore, M.J.; Bodsworth, N.J.; Atkinson, T.; Minton, N.P.
Eur. J. Biochem. 204, 657-667, 1992
A/Title: The complete amino acid sequence of the Clostridium botulinum type-E neurotoxin
A/Reference number: S21178; MUID:92174922; PMID:1541280
A/Accession: S21178
A/Molecule type: DNA
A/Residues: 1-1252 <WHE>

A;Title: Sequences of the botulinum neurotoxin E derived from Clostridium botulinum type A;
A;Accession: JH0256; MUID:92181428; PMID:1543481
A;Status: nucleic acid sequence not shown
A;Molecule type: DNA
A;Residues: 1-27,'E','29-1251<POU>
A;Cross-references: UNIPROT:P30995; UNIPARC:UPI000017670D; EMBL:X62088; NID:g40379
A;Experimental source: strains ATCC 43181 and ATCC 43755
A;Fuji, N.; Kimura, K.; Yashiki, T.; Indo, H.; Murakami, T.; Tsuzuki, K.; Yokosawa, N.
J. Gen. Microbiol. 137, 519-525, 1991
A;Title: Cloning of a DNA fragment encoding the 5'-terminus of the botulinum type E toxin.
A;Reference number: S16145; MUID:91237316; PMID:2033376
A;Accession: S16145
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-229,'M','231-252<FUJ>
A;Cross-references: UNIPARC:UPI000016EA8F; EMBL:X53180; NID:g40407; PIDN:CAA37321.1; PID
A;Experimental source: strain BL6340
C;Comment: The clostridial neurotoxins are toxins that inhibit neurotransmitter release
C;Superfamily: tetanus toxin
C;Keywords: neurotoxin
F;2-422/Product: botulinum neurotoxin type E light chain #status predicted <LIG>
F;423-1251/Product: botulinum neurotoxin type E heavy chain #status predicted <HEA>
F;412-426/Disulfide bonds: #status predicted

Query Match 73.8%; Score 568.5; DB 2; Length 1251;
Best Local Similarity 71.0%; Pred. NO. 1.6e-37;
Matches 103; Conservative 26; Mismatches 15; Indels 1; Gaps 1;

QY 1 SYTNKILLYFNKYKKIKDNISLDIMRYENKNKFIDISGVGNSISNGDVVIYSTNRNQF 60
|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DB 829 SYTDKILSYFNKFPFKRISKSSVLNMRYKNDKYVDTSGDYDSININGDVKYPTNNQF 888
|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 61 GYYSKPSSEVNTAONNDIYNGRYQNFSIFWVRIPKYFNK-VNLNNEYTIIDCIRNNNS 119
|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DB 889 GLYNCKLSEVNISONDYIIYDNYKNFYSIFWVRIPNYDKNIYVNVNNEYTIINCMDRNS 948
|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
QY 120 GWKISLVNKIIWTLODTAGNNOKL 144
|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
DB 949 GWKVSLSHNELIWTLODNGSINOQL 973
|||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:

RESULT 8
BTCLAB
N;Alternate names: botulinum neurotoxin type A
C;Species: Clostridium botulinum
C;Date: 31-Mar-1993 #sequence revision 31-Mar-1993 #text change 09-Jul-2004
C;Accession: A35294; S09492; S68220; A33401; A33884; A60025; A27000
R;Binz, T.; Kurazono, H.; Wille, M.; Frevert, J.; Wernars, K.; Niemann, H.
J. Biol. Chem. 265, 9153-9158, 1990
A;Title: The complete sequence of botulinum neurotoxin type A and comparison with other
A;Reference number: A35294; MUID:90264400; PMID:2160960
A;Accession: A35294
A;Molecule type: DNA
A;Residues: 1-1296<BIN>
A;Cross-references: UNIPROT:P10845; UNIPARC:UPI0000001386; GB:M30196; NID:g144864; PIDN
A;Experimental source: strain 62A, subtype A
R;Thompson, D.E.; Brehm, J.K.; Oultram, J.D.; Swinfield, T.J.; Shone, C.C.; Atkinson, T.
Eur. J. Biochem. 189, 73-81, 1990
A;Title: The complete amino acid sequence of the Clostridium botulinum type A neurotoxin
A;Reference number: S09492; MUID:90235864; PMID:2185020
A;Accession: S09492
A;Molecule type: DNA
A;Residues: 1,'Q','3-26','V','28-1296<THO>
A;Cross-references: UNIPARC:UPI000003409D; EMBL:X52066; NID:g40381; PIDN:CAA36289.1; PID
A;Experimental source: NCTC 2916
R;Fuji, R.; Fujinaga, Y.; Inoue, K.; Nakajima, H.; Kumon, H.; Oguma, K.
FEBS Lett. 376, 41-44, 1995
A;Title: Molecular characterization of two forms of nontoxic-nonhemagglutinin component;
A;Reference number: S67988; MUID:96096783; PMID:8521962
A;Accession: S68220

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A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-12 <FU>
A;Cross-references: UNIPARC:UPI0000173655; EMBL:D67030; DDBJ:D50421; NID:g2160224
R;Batley, M.J.; Somers, E.; DasGupta, B.R.
Biochem. Biophys. Res. Commun. 162, 1388-1395, 1989
A;Title: Characterization of botulinum type A neurotoxin gene: delineation of the N-term
A;Reference number: A33401; MUID:89350959; PMID:2669749
A;Accession: A33401
A;Molecule type: DNA
A;Residues: 1-35 <BET>
A;Cross-references: UNIPARC:UPI000016EA84; GB:M27892; NID:g144880; PIDN:AAA23269.1; PID:
R;Gimenez, J.A.; DasGupta, B.R.
J. Protein Chem. 12, 351-363, 1993
A;Title: Botulinum type A neurotoxin digested with pepsin yields 132, 97, 72, 45, 42, and
A;Reference number: A53884; MUID:94000342; PMID:8397793
A;Accession: A53884
A;Status: preliminary
A;Molecule type: protein
A;Residues: 867-880,1148-1217,'Y',1219 <GIM>
A;Cross-references: UNIPARC:UPI00000BBB24; UNIPARC:UPI0000173656
A;Experimental source: strain Hall
A;Note: sequence extracted from NCBI backbone (NCBIP:139159); sequence modified after ex
Biochimie 72, 661-664, 1990
A;Title: Botulinum neurotoxin type A: sequence of amino acids at the N-terminus and aro
A;Reference number: A60025; MUID:91120847; PMID:2126206
A;Accession: A60025
A;Molecule type: protein
A;Residues: 2-6;445-453,'X',455-457 <DAS1>
A;Cross-references: UNIPARC:UPI0000173657; UNIPARC:UPI0000173658
R;DasGupta, B.R.; Foley, J.; Niece, R.
Biochemistry 26, 4162, 1987
A;Title: Partial sequence of the light chain of botulinum neurotoxin type A.
A;Reference number: A27000
A;Accession: A27000
A;Molecule type: protein
A;Residues: 2-47 <DAS2>
A;Cross-references: UNIPARC:UPI0000173659
R;Binz, T.; Blasi, J.; Yamasaki, S.; Baumeister, A.; Link, E.; Suedhof, T.C.; Jahn, R.;
J. Biol. Chem. 269, 1617-1620, 1994
A;Title: Proteolysis of SNAP-25 by types B and A botulinum neurotoxins.
A;Reference number: A49708; MUID:94124495; PMID:8294407
A;Contents: annotation
C;Comment: Botulinum neurotoxins inhibit neurotransmitter release from cholinergic synap
C;Genetics:
A;Gene: atx; botA
C;Function:
A;Description: catalyzes hydrolysis of an Asn-Arg peptide bond in synaptosomal-associate
C;Superfamily: tetanus toxin
C;Keywords: disulfide bond; hydrolase; metalloproteinase; neurotoxin; transmembrane prot
F;2-444/Product: bontoxilysin A light chain #status experimental <LIGHT>
F;445-1296/Product: bontoxilysin A heavy chain #status experimental <HVY>
F;223,227/Binding site: zinc (His) #status predicted
F;224/Active site: Glu #status predicted

Query Match 49.2%; Score 378.5; DB 1; Length 1296;
Best Local Similarity 48.3%; Pred. No. 2.3e-22;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;

Qy 2 YTNDKILILFVKLYKKIKDMSILDMRYENKFKIDISGYGNSINGDVYIYSTRNQFG 61
Db 856 YVDNQRLLSFTFEYIKNIINTSILNLAYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 915
Qy 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYPKVNLANNEYTIIDICIRNNNSG 121
Db 916 LFNLESSKIEVLKNAIVNYSMYENFSTFWIRIPKYPKNSILNNEYTIINCENNSGW 974
Qy 122 KISLNYNKIIWTLODTAGNNQKL 144
Db 975 KVSILNYGEIITWLODTQEIQRV 997
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```
RESULT 9
I40645
botulinum neurotoxin type A - Clostridium botulinum
C;Species: Clostridium botulinum
C;Date: 12-Aug-1996 #sequence_revision 12-Aug-1996 #text_change 09-Jul-2004
C;Accession: I40645
R;Willems, A.; East, A.K.; Lawson, P.A.; Collins, M.D.
Res. Microbiol. 144, 547-556, 1993
A;Title: Sequence of the gene coding for the neurotoxin of Clostridium botulinum type A
A;Reference number: I40645; MUID:94143603; PMID:8310180
A;Accession: I40645
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: DNA
A;Residues: 1-1296 <RES>
A;Cross-references: UNIPROT:Q45894; UNIPARC:UPI000016EA88; EMBL:X73423; NID:g507070; PI
C;Superfamily: tetanus toxin
C;Keywords: neurotoxin

Query Match 49.0%; Score 377.5; DB 2; Length 1296;
Best Local Similarity 49.0%; Pred. No. 2.8e-22;
Matches 70; Conservative 29; Mismatches 43; Indels 1; Gaps 1;

Qy 2 YTNDKILILFVKLYKKIKDMSILDMRYENKFKIDISGYGNSINGDVYIYSTRNQFG 61
Db 856 YVDNQRLLSFTFEYIKNIINTSILNLAYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 915
Qy 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYPKVNLANNEYTIIDICIRNNNSG 121
Db 916 LFNLESSKIEVLKNAIVNYSMYENFSTFWIRIPKYPKNSILNNEYTIINCENNSGW 974
Qy 122 KISLNYNKIIWTLODTAGNNQKL 144
Db 975 KVSILNYGEIITWLODTQEIQRV 997

RESULT 10
A48940
bontoxilysin (EC 3.4.24.69) B precursor - Clostridium botulinum
N;Alternate names: botulinum neurotoxin type B (BoNT/B)
C;Species: Clostridium botulinum
C;Date: 19-Dec-1993 #sequence_revision 18-Nov-1994 #text_change 09-Jul-2004
C;Accession: A48940; S21575; A42871; S07155; S08562; S07128; S08573; S08574
R;Whelan, S.M.; Elmore, M.J.; Bodeworth, N.J.; Brehm, J.K.; Atkinson, T.; Minton, N.P.
Appl. Environ. Microbiol. 58, 2345-2354, 1992
A;Title: Molecular cloning of the Clostridium botulinum structural gene encoding the ty
A;Reference number: A48940; MUID:92384550; PMID:1514783
A;Accession: A48940
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-1291 <WHE>
A;Cross-references: UNIPROT:P10844; UNIPARC:UPI000016EA76; GB:M81186; NID:g144734; PIDN
A;Experimental source: type B, Danish
A;Note: sequence extracted from NCBI backbone (NCBIN:112080, NCBIP:112081); this public
R;Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A;Title: Gene probes for identification of the botulinum neurotoxin gene and specific i
A;Reference number: S48103; MUID:94013372; PMID:8408542
A;Accession: S48103
A;Status: preliminary
A;Molecule type: DNA
A;Residues: 634-994 <CAM>
A;Cross-references: UNIPARC:UPI000016EA7A; EMBL:X70817; NID:g407782; PIDN:CAA50148.1; P
R;Szabo, E.A.; Pemberton, J.M.; Desmarchelier, P.M.
submitted to the EMBL Data Library, April 1992
A;Description: Partial amino acid sequence of botulinum neurotoxin type B and comparisi
A;Reference number: S21575
A;Accession: S21575
A;Molecule type: DNA
A;Residues: 36-217,'G',219-224,'S',226-246 <SZA>
A;Cross-references: UNIPARC:UPI000016EA79; EMBL:Z11934; NID:g40383; PIDN:CAA77991.1; PI
R;Kurazono, H.; Mochida, S.; Binz, T.; Eisel, U.; Quanz, M.; Grebenstein, O.; Wernars,
J. Biol. Chem. 267, 14721-14729, 1992
```

A;Title: Minimal essential domains specifying toxicity of the light chains of tetanus toxin
A;Reference number: A42871; MUID:92340509; PMID:1634516
A;Accession: A42871
A;Status: nucleic acid sequence not shown
A;Molecule type: mRNA
A;Residues: 1-313, 'S', 315-451 <KUR>
A;Cross-references: UNIPARC:UPI0000083742
A;Experimental source: strain Okra
A;Note: sequence extracted from NCBI backbone (NCBIP:109365)
R;DasGupta, B.R.; Datta, A.
Biochimie 70, 811-817, 1988
A;Title: Botulinum neurotoxin type B (strain 657): partial sequence and similarity with
A;Reference number: S07155; MUID:89000987; PMID:3139097
A;Accession: S07155
A;Molecule type: protein
A;Residues: 2-29, 'M', 31-45 <DAS>
A;Cross-references: UNIPARC:UPI0000173650
A;Accession: S08562
A;Molecule type: protein
A;Residues: 442-463, 'R', 465-467 <DA2>
A;Cross-references: UNIPARC:UPI0000173650
R;Schmidt, J.J.; Sathyanarayanan, V.; DasGupta, B.R.
Arch. Biochem. Biophys. 238, 544-548, 1985
A;Title: Partial amino acid sequences of botulinum neurotoxins types B and E.
A;Reference number: S07128; MUID:85197963; PMID:3888113
A;Accession: S07128
A;Status: preliminary
A;Molecule type: protein
A;Residues: 2-16 <SCH1>
A;Cross-references: UNIPARC:UPI0000173652
A;Accession: S08573
A;Status: preliminary
A;Molecule type: protein
A;Residues: 2-17 <SCH2>
A;Cross-references: UNIPARC:UPI0000173652
A;Accession: S08574
A;Status: preliminary
A;Molecule type: protein
A;Residues: 442-459 <SCH3>
A;Cross-references: UNIPARC:UPI0000173652
R;Schiaivo, G.; Benfenati, F.; Poulain, B.; Rossetto, O.; de Laureto, P.P.; DasGupta, B.R.
Nature 359, 832-835, 1992
A;Title: Tetanus and botulinum-B neurotoxins block neurotransmitter release by proteolytic
A;Reference number: S27125; MUID:93063293; PMID:1331807
A;Contents: annotation
A;Comment: Botulinum neurotoxins inhibit neurotransmitter release from cholinergic synapses
C;Genetics:
A;Gene: bont/b
A;Function: catalyzes hydrolysis of a Gln-Phe peptide bond in synaptobrevin 2
C;Superfamily: tetanus toxin
C;Keywords: hydrolase; metalloproteinase; neurotoxin; transmembrane protein; zinc
F:2-441/Product: bontoxilysin B light chain #status experimental <LIGHT>
F:442-1291/Product: bontoxilysin B heavy chain #status experimental <HVY>
F:230,234/Binding site: zinc (His) #status predicted
F:231/Active site: Glu #status predicted
Query Match 46.1%; Score 355; DB 1; Length 1291;
Best Local Similarity 47.3%; Pred. No. 1.7e-20;
Matches 69; Conservative 33; Mismatches 38; Indels 6; Gaps 3;
Qy 2 YTNDKILLYFNKLYKKIKDMSILDMRYENKFPIDISGYGNSINGDVYIYSTRNQF 61
Db 843 YTNDTILYEMFNKYNSEILNLIYRDNLDLSGYGKVEYDGVGL--NDKNQF 900
Qy 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWIRPKYFN---KVNLNNEYTIIDICRNN 118
Db 901 LTSSANSKIRVTQNIIFNSVFLDFSVFWIRPKYRNDIIONYIHNEYTIINCCK-N 959
Qy 119 SGWKISLVNKKIWTLODTAGNNQKL 144
Db 960 SGWKISIRGNRIIWTLDINGKTKSV 985

RESULT 11

I40631

non-proteolytic botulinum neurotoxin type B precursor - Clostridium botulinum

C;Species: Clostridium botulinum

C;Date: 12-Aug-1996 #sequence_revision 12-Aug-1996 #text_change 09-Jul-2004

C;Accession: I40631; S48103; S48104; S36015

R;Hutson, R.A.; Collins, M.D.; East, A.K.; Thompson, D.E.

Curr. Microbiol. 28, 101-110, 1994

A;Title: Nucleotide sequence of the gene coding for non-proteolytic Clostridium botulinum

A;Reference number: I40631; MUID:94122659; PMID:7764370

A;Accession: I40631

A;Status: preliminary; translated from GB/EMBL/DDBU

A;Molecule type: DNA

A;Residues: 1-1291 <RES>

A;Cross-references: UNIPARC:Q08077; UNIPARC:UPI000008DC86; EMBL:X71343; NID:G296148; PID:

R;Campbell, K.D.; Collins, M.D.; East, A.K.

J. Clin. Microbiol. 31, 2255-2262, 1993

A;Title: Gene probes for identification of the botulinum neurotoxin gene and specific id

A;Reference number: S48103; MUID:94013372; PMID:8408542

A;Accession: S48103

A;Status: preliminary; nucleic acid sequence not shown; translation not shown

A;Molecule type: DNA

A;Residues: 634-761, 'E', 763-841, 'M', 843, 'T', 845, 'N', 847-994 <CAM1>

A;Cross-references: UNIPARC:UPI000008BEAF; EMBL:X70814; NID:G407778; PIDN:CAAS0145.1; PI:

A;Experimental source: non-proteolytic strain 2129B (Scott)

A;Note: the nucleotide sequence was submitted to the EMBL Data Library, January 1993

A;Accession: S48104

A;Status: preliminary

A;Molecule type: DNA

A;Residues: 634-843, 'T', 845, 'N', 847-994 <CAM2>

A;Cross-references: UNIPARC:UPI0000087A6B; EMBL:X70819; NID:G407780; PIDN:CAAS0150.1; PI:

A;Experimental source: non-proteolytic strain Eklund 2B (Colworth 229)

A;Comment: Botulinum neurotoxin type B in these strains may possess a capable catalytic s

C;Genetics:

A;Gene: bont/b

C;Superfamily: tetanus toxin

C;Keywords: metalloprotein; neurotoxin; transmembrane protein; zinc

F:2-441/Product: botulinum neurotoxin type B light chain #status predicted <LIGHT>

F:442-1291/Product: botulinum neurotoxin type B heavy chain #status predicted <HVY>

F:230,234/Binding site: zinc (His) #status predicted

F:231/Active site: Glu #status predicted

Query Match 45.2%; Score 348; DB 2; Length 1291;

Best Local Similarity 45.6%; Pred. No. 6.2e-20;

Matches 67; Conservative 35; Mismatches 39; Indels 6; Gaps 3;

Qy 1 SYTNDKILLYFNKLYKKIKDMSILDMRYENKFPIDISGYGNSINGDVYIYSTRNQF 60

Db 842 TYSNIEILIKIFNKYNSEILNLIYRDNLDLSGYGKVEYDGVGL--NDKNQF 899

Qy 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWIRPKYFN---KVNLNNEYTIIDICRNN 117

Db 900 KLTSSANSKIRVTQNIIFNSVFLDFSVFWIRPKYRNDIIONYIHNEYTIINCCK-N 958

Qy 118 NSGKISLVNKKIWTLODTAGNNQKL 144

Db 959 NSGKISIRGNRIIWTLDINGKTKSV 985

RESULT 12

S39791

neurotoxin - Clostridium botulinum

C;Species: Clostridium botulinum

C;Date: 07-Oct-1994 #sequence_revision 01-Dec-1995 #text_change 16-Jul-1999

C;Accession: S39791

R;Campbell, K.; Collins, M.D.; East, A.K.

Biochim. Biophys. Acta 1216, 487-491, 1993

A;Title: Nucleotide sequence of the gene coding for Clostridium botulinum (Clostridium e

A;Reference number: S39791; MUID:94092745; PMID:8268233

A;Accession: S39791

A;Status: preliminary

A;Molecule type: DNA

[illegible]

Db 846 SYTNNSLLKDIINEYFNSINDSKILSLQNKKNALVDTSGYNAEVRVGDVQLNTIYTND 905
Qy 61 GIYSKSESEVNIAQNNDIIYNGRYONFISFWVRIPKYFNKVNLNNEYTIIDCIRNNNSG 120
Db 906 KL-SSSGDKIIVNLLNNILYSAIYENS SVFWIKISK--DLTNSHNEYTIINSI-EQNSG 961
Qy 121 WKISLNTYKIIWTLODTAGNNOK 143
Db 962 WKLCIRNGNIEWILODV---NRK 981

Search completed: March 2, 2006, 00:47:41
Job time : 13.0278 secs

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AC Q57236; Q45863;
DT 01-NOV-1996 (TrEMBLrel. 01, Created)
DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT 01-FEB-2005 (TrEMBLrel. 29, Last annotation update)
DE BONT/F (Neurotoxin type F).
GN Name=bont/f; Synonyms=bont/F;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
[1]
RN NUCLEOTIDE SEQUENCE.
RC STRAIN=NCTC 10281;
RA Hutson R.A., Collins M.D.; to the EMBL/GenBank/DBJ databases.
RL Submitted (SEP-1994) to the EMBL/GenBank/DBJ databases.
[2]
RN NUCLEOTIDE SEQUENCE.
RA Elmore M.J., Bodsworth N.J., Whelan S.M., Minton N.P.;
RL Submitted (AUG-1994) to the EMBL/GenBank/DBJ databases.
DR EMBL; X81714; CAA57358.1; -; Genomic DNA.
DR EMBL; L33496; AAA23210.1; -; Genomic DNA.
DR PIR; S48110; S48110.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27.002; -.
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR Pfam; PF01742; Peptidase M27; 1.
DR PRINTS; PR00760; BONTOLYLISIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
KW Neurotoxin.
SQ SEQUENCE 1278 AA; 147073 MW; A1BE1318431D6918 CRC64;
Query Match 100.0%; Score 770; DB 2; Length 1278;
Best Local Similarity 100.0%; Pred. No. 1.8e-54;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 SYTDKILLYFNKLYKKIKDNLDMRYENKFKIDISGYGNSISINGDVYIYSTNRQF 60
DB 848 SYTDKILLYFNKLYKKIKDNLDMRYENKFKIDISGYGNSISINGDVYIYSTNRQF 907
QY 61 GIYSKSEVNIAQNNDIYNGRYQNFISFPWRIPKYPKVNKLNNETIIDCIRNNSG 120
DB 908 GIYSKSEVNIAQNNDIYNGRYQNFISFPWRIPKYPKVNKLNNETIIDCIRNNSG 967
QY 121 WKISLNYNKIIWTLODTAGNNQKL 144
DB 968 WKISLNYNKIIWTLODTAGNNQKL 991
RESULT 3
BXF_CLOBO STANDARD; PRT; 1274 AA.
AC P30996;
DT 01-JUL-1993 (Rel. 26, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type F precursor (EC 3.4.24.69) (BONT/F)
DE (Bontoxilysin F) [Contains: Botulinum neurotoxin F light chain;
DE Botulinum neurotoxin F heavy chain].
GN Name=botF;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
[1]
RN NUCLEOTIDE SEQUENCE.
RC STRAIN=Type F / ATCC 23387;
RX MEDLINE=93012902; PubMed=1398040; DOI=10.1016/0378-1097(92)90408-G;
RA East A.K., Richardson P.T., Allaway D., Collins M.D., Roberts T.A.,
RA Thompson D.E.;
RT "Sequence of the gene encoding type F neurotoxin of Clostridium
RL botulinum.";
RL FEMS Microbiol. Lett. 75:225-230(1992).
[2]
RN NUCLEOTIDE SEQUENCE OF 1-64.
RC STRAIN=Type F / Hobbs FT10;
RX MEDLINE=94297488; PubMed=7764998;
RA East A.K., Collins M.D.;
RT "Conserved structure of genes encoding components of botulinum
RT neurotoxin complex M and the sequence of the gene coding for the
RT nontoxic component in nonproteolytic Clostridium botulinum type F.";
RL Curr. Microbiol. 29:69-77(1994).
[3]
RN NUCLEOTIDE SEQUENCE OF 634-1002.
RX MEDLINE=94013372; PubMed=8408542;
RA Campbell K.D., Collins M.D., East A.K.;
RT "Gene probes for identification of the botulinum neurotoxin gene and
RT specific identification of neurotoxin types B, E, and F.";
RL J. Clin. Microbiol. 31:2255-2262(1993).
[4]
RN IDENTIFICATION OF SUBSTRATE.
RX MEDLINE=94230352; PubMed=8175689;
RA Yamasaki S., Baumeister A., Binz T., Blasi J., Link E., Cornille F.,
RA Roques B., Fyke E.M., Suedhof T.C., Jahn R., Niemann H.; types D and F
RT "Cleavage of members of the synaptobrevin/VAMP family by types D and F
RL botulinum neurotoxins and tetanus toxin.";
RL J. Biol. Chem. 269:12764-12772(1994).
CC -1- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
CC release. It binds to peripheral neuronal synapses, is internalized
CC and moves by retrograde transport up the axon into the spinal cord
CC where it can move between postsynaptic and presynaptic neurons. It
CC inhibits neurotransmitter release by acting as a zinc
CC endopeptidase that catalyzes the hydrolysis of the 58-Gln-Lys-59
CC bond of synaptobrevins-1 and -2.
CC -1- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -1- COFACTOR: Binds 1 zinc ion per subunit (By similarity).
CC -1- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H). The light chain has the pharmacological activity,
CC while the N- and C-terminal of the heavy chain mediate channel
CC formation and toxin binding, respectively.
CC -1- SUBCELLULAR LOCATION: Secreted.
CC -1- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
CC -1- SIMILARITY: Belongs to the peptidase M27 family.
-----
CC This Swiss-Prot entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.
-----
DR EMBL; M92906; AAA23263.1; -; Genomic DNA.
DR EMBL; S73676; AAC60475.1; -; Genomic DNA.
DR EMBL; X70820; CAA50151.1; -; Genomic DNA.
DR EMBL; X70816; CAA50147.1; -; Genomic DNA.
DR PIR; I40813; I40813.
DR PIR; S48109; S48109.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27.002; -.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR006025; Pept M Zn BS.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR012928; Toxin recpt bd_N.
DR InterPro; IPR012500; Toxin_trans.
DR Pfam; PF01742; Peptidase M27; 1.
DR Pfam; PF07953; Toxin_R_bind_N; 1.
DR Pfam; PF07952; Toxin_trans; 1.
DR PRINTS; PR00760; BONTOLYLISIN.
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DR ProDom: PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; 1.
KW Hydrolyase; Metal-binding; Metalloprotease; Neurotoxin; Protease;
KW CHAIN 1 436 Botulinum neurotoxin F light chain.
FT CHAIN 437 1274 Botulinum neurotoxin F heavy chain.
FT ACT_SITE 228 227 By similarity.
FT METAL 231 231 Zinc (catalytic) (By similarity).
FT METAL 231 231 Zinc (catalytic) (By similarity).
FT DISULFID 429 445 Interchain (between light and heavy chains) (Probable).
FT SEQUENCE 1274 AA; 146710 MW; 5B99756A7438B921 CRC64;

Query Match 81.4%; Score 626.5; DB 1; Length 1274;
Best Local Similarity 80.3%; Pred. No. 1.1e-42;
Matches 118; Conservative 14; Mismatches 12; Indels 3; Gaps 1;

Qy 1 SYTNDKILLYFNKLYKKIKDMSILDYENKFKFIDISGYGNSISINGDVYIYSTNRNQF 60
Db 847 SYTNDKILLYFNRLYKIKDSSILDYENKFKFIDISGYGNSISINGDVYIYSTNRNQF 906
Qy 61 GYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNNSG 120
Db 907 GYNSRLSEVNIAQNNDIYNSRYQNFISFWVRIPKYPKMHNNREYTIINCWGNNSG 966
Qy 121 WKISLNYNKK---IWTLODTAGNNOKL 144
Db 967 WKISLRTVRCDEIIWTLODTSGNKENL 993

RESULT 4
Q9ZAJ5 CLOBO
ID Q9ZAJ5 CLOBO PRELIMINARY; PRT; 1280 AA.
AC Q9ZAJ5;
DT 01-MAY-1999 (TrEMBLrel. 10, Created)
DT 01-MAY-1999 (TrEMBLrel. 10, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Bont protein.
GN Name=bont;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=CDC 3281;
RX MEDLINE=98440323; PubMed=9767710; DOI=10.1007/s002849900384;
RA Santos-Buelga J., Collins M.D., East A.K.;
RT "Characterization of the genes encoding the Botulinum neurotoxin complex in a strain of clostridium botulinum producing type B & F neurotoxins.";
RT Curr. Microbiol. 37:312-318 (1998).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=CDC 3281;
RA Santos-Buelga J.A.;
RL Submitted (JUN-1997) to the EMBL/GenBank/DBJ databases.
DR EMBL; Y13631; CAA73972.1; -; Genomic_DNA.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27_002; -.
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR Pfam; PF01742; Peptidase M27; 1.
DR PRINTS; PR00760; BONTOKILYSIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
DR CURT. Microbiol. 37:312-318 (1998).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=CDC 3281;
RA Santos-Buelga J.A.;
RL Submitted (JUN-1997) to the EMBL/GenBank/DBJ databases.
DR EMBL; Y13631; CAA73972.1; -; Genomic_DNA.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27_002; -.
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR Pfam; PF01742; Peptidase M27; 1.
DR PRINTS; PR00760; BONTOKILYSIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
DR SEQUENCE 1280 AA; 147486 MW; D0F748976EBC222C CRC64;

us-08-981-087b-2.rup

Query Match 81.2%; Score 625.5; DB 2; Length 1280;
Best Local Similarity 80.3%; Pred. No. 1.1e-42;
Matches 118; Conservative 13; Mismatches 13; Indels 3; Gaps 1;

Qy 1 SYTNDKILLYFNKLYKKIKDMSILDYENKFKFIDISGYGNSISINGDVYIYSTNRNQF 60
Db 848 SYTNDKILLYFNRLYKIKDSSILDYENKFKFIDISGYGNSISINGDVYIYSTNRNQF 907
Qy 61 GYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNNSG 120
Db 908 GYNSRLSEVNIAQNNDIYNSRYQNFISFWVRIPKYPKMHNNREYTIINCWGNNSG 967
Qy 121 WKISLNYNKK---IWTLODTAGNNOKL 144
Db 968 WKISLRTVRCDEIIWTLODTSGNKENL 994

RESULT 5
Q45851_9CLOT
ID Q45851_9CLOT PRELIMINARY; PRT; 1268 AA.
AC Q45851;
DT 01-NOV-1996 (TrEMBLrel. 01, Created)
DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Neurotoxin type F.
GN Name=bont /f;
OS Clostridium baratii.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1561;
RN [1]
RP NUCLEOTIDE SEQUENCE.
EX MEDLINE=93252228; PubMed=8486245; DOI=10.1016/0378-1097(93)90581-L;
RA Thompson D.E., Hutson R.A., East A.K., Allaway D., Collins M.D.,
RA Richardson P.T.;
RT "Nucleotide sequence of the gene coding for Clostridium baratii type F neurotoxin: comparison with other clostridial neurotoxins.";
RL FEMS Microbiol. Lett. 108:175-182 (1993).
DR EMBL; X68262; CAA48329.1; -; Genomic_DNA.
DR PIR; S33411; S33411.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27_002; -.
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR Pfam; PF01742; Peptidase M27; 1.
DR PRINTS; PR00760; BONTOKILYSIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
DR Neurotoxin.
RW SEQUENCE 1268 AA; 145512 MW; 963040091AC15BD2 CRC64;

Query Match 81.1%; Score 625; DB 2; Length 1268;
Best Local Similarity 81.1%; Pred. No. 1.4e-42;
Matches 116; Conservative 11; Mismatches 16; Indels 0; Gaps 0;

Qy 2 YTNDKILLYFNKLYKKIKDMSILDYENKFKFIDISGYGNSISINGDVYIYSTNRNQF 61
Db 840 YTNDKILLYFNRLYKIKDSSILDYENKFKFIDISGYGNSISINGDVYIYSTNRNQF 899
Qy 62 YSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNNSG 121
Db 900 YSSRLSEVNIAQNNDIYNSRYQNFISFWVRIPKYPKMHNNREYTIINCWGNNSG 959
Qy 122 KISLNYNKKIWTLODTAGNNOKL 144
Db 960 KISLNYNKKIWTLODTAGNNOKL 982
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RESULT 6
Q45861 CLOBO
ID Q45861_CLOBO PRELIMINARY; PRT; 367 AA.
AC Q45861;
DT 01-NOV-1996 (TrEMBLrel. 01, Created)
DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT 01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
DE Botulinum neurotoxin type E (Fragment).
GN Name=BoNT/E;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
[1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN-type E;
RX MEDLINE=94013372; PubMed=8408542;
RA Campbell K.D.; Collins M.D.; East A.K.;
RT "Gene probes for identification of the botulin neurotoxin gene and
RT specific identification of neurotoxin types B, E, and F.";
RL J. Clin. Microbiol. 31:2255-2262(1993).
[2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN-type E;
RA Campbell K.D.;
RL Submitted (JAN-1993) to the EMBL/GenBank/DBJ databases.
DR EMBL; X70818; CAA50149.1; -; Genomic_DNA.
DR PIR; S48106; S48106.
DR HSP; P10844; IFS1.
DR GO; GO:0009405; P:pathogenesis; IEA.
KW Neurotoxin.
FT NON TER 1
FT NON TER 367
FT NON TER 367
SQ SEQUENCE 367 AA; 42902 MW; 346A610C2FF70262 CRC64;

Query Match 74.2%; Score 571.5; DB 2; Length 367;
Best Local Similarity 71.7%; Pred. No. 9e-39;
Matches 104; Conservative 25; Mismatches 15; Indels 1; Gaps 1;

Qy 1 SYTDKILLYFNKLYKKIKDINSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
Db 214 SYTDKILLYFNKLYKKIKDINSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 273

Qy 61 GIYSKSPSEVNIQNNDIYNGRYQNFISFWIRPKYFNK-VNLNNEYTIIDCIRNNS 119
Db 274 GIYNDKLSSEVNIQNNDIYNGRYQNFISFWIRPKYFNK-VNLNNEYTIIDCIRNNS 333

Qy 120 GWKISLNYNKKIITWLTQDTAGNNOKL 144
Db 334 GWKVSILNHNHETIITWLTQDNAGINQKL 358

RESULT 7
Q54A79 CLOBO
ID Q54A79_CLOBO PRELIMINARY; PRT; 1252 AA.
AC Q54A79;
DT 13-SEP-2005 (TrEMBLrel. 31, Created)
DT 13-SEP-2005 (TrEMBLrel. 31, Last sequence update)
DT 13-SEP-2005 (TrEMBLrel. 31, Last annotation update)
DE Botulinum neurotoxin type E.
GN Name=BoNT/E;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
[1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=35396;
RA Tsukamoto K.; Mukanoto M.; Kohda T.; Ihara H.; Wang X.; Maegawa T.;
RA Nakamura S.; Karasawa T.; Kozaki S.;
RT "Sequence of the botulinum neurotoxin type E.";
RT Submitted (MAR-2002) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB082519; BAB86845.1; -; Genomic_DNA.

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KW Neurotoxin.
SQ SEQUENCE 1252 AA; 143637 MW; 76401D4D2E95D7A2 CRC64;

Query Match 74.2%; Score 571.5; DB 2; Length 1252;
Best Local Similarity 71.7%; Pred. No. 3.3e-38;
Matches 104; Conservative 25; Mismatches 15; Indels 1; Gaps 1;

Qy 1 SYTDKILLYFNKLYKKIKDINSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
Db 829 SYTDKILLYFNKLYKKIKDINSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 888

Qy 61 GIYSKSPSEVNIQNNDIYNGRYQNFISFWIRPKYFNK-VNLNNEYTIIDCIRNNS 119
Db 889 GIYNDKLSSEVNIQNNDIYNGRYQNFISFWIRPKYFNK-VNLNNEYTIIDCIRNNS 948

Qy 120 GWKISLNYNKKIITWLTQDTAGNNOKL 144
Db 949 GWKVSILNHNHETIITWLTQDNAGINQKL 973

RESULT 8
BXE_CLOBO
ID BXE_CLOBO STANDARD; PRT; 1250 AA.
AC P30995;
DT 01-JUL-1993 (Rel. 26, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type E precursor (EC 3.4.24.69) (BoNT/E)
DE (Bontoxilysin E) [Contains: Botulinum neurotoxin E light chain;
DE Botulinum neurotoxin E heavy chain].
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
[1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=ATCC 43181; and ATCC 43755;
RX MEDLINE=92181428; PubMed=1543481;
RA Poulet S.; Hauser D.; Quanz M.; Niemann H.; Popoff M.R.;
RT "Sequences of the botulin neurotoxin E derived from Clostridium
RT botulinum type E (strain Beluga) and Clostridium butyricum (strains
RT ATCC 43181 and ATCC 43755).";
RL Biochem. Biophys. Res. Commun. 183:107-113(1992).
[2]
RP NUCLEOTIDE SEQUENCE OF 1-251.
RC STRAIN=BL6340;
RX MEDLINE=91237316; PubMed=2033376;
RA Fujii N.; Kimura K.; Murakami T.; Indoh T.; Tsuzuki K.; Yokosawa N.;
RA Yashiki T.; Oguma K.;
RT "Cloning of a DNA fragment encoding the 5'-terminus of the botulinum
RT type E toxin gene from Clostridium butyricum strain BL6340.";
RL J. Gen. Microbiol. 137:519-525(1991).
[3]
RP PROTEIN SEQUENCE OF 1-48.
RC STRAIN=5262;
RA Gimenez J.; Foley J.; Dasgupta B.R.;
RT "Neurotoxin type E from Clostridium botulinum and C. butyricum;
RT partial sequence and comparison.";
RL FASEB J. 2:A1750-A1750(1988).
CC -!- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
CC release. It binds to peripheral neuronal synapses, is internalized
CC and moves by retrograde transport up the axon into the spinal cord
CC where it can move between postsynaptic and presynaptic neurons. It
CC inhibits neurotransmitter release by acting as a zinc
CC endopeptidase.
CC -!- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -!- COFACTOR: Binds 1 zinc ion per subunit (by similarity).
CC -!- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H). The light chain has the pharmacological activity,
CC while the N- and C-terminal of the heavy chain mediate channel
CC formation and toxin binding, respectively.

```

CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
CC -!- SIMILARITY: Belongs to the peptidase M27 family.
CC -----
CC This Swiss-Prot entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.
CC -----
CC EMBL; X62088; CAA43998.1; -; Genomic DNA.
CC EMBL; X53180; CAA37321.1; -; Genomic DNA.
CC PIR; J02556; JH0256.
CC HSSP; Q45894; 1E1H.
CC SMR; F30995; 1-411.
CC -----
CC MEROPS; M27.002; -.
CC InterPro; IPR011591; Botulinum.
CC InterPro; IPR006025; Pept M Zn BS.
CC InterPro; IPR000395; Peptidase M27.
CC InterPro; IPR012928; Toxin_recp_bdn.
CC InterPro; IPR012500; Toxin trans.
CC Pfam; PF01742; Peptidase M27; 1.
CC Pfam; PF07953; Toxin R bind N; 1.
CC Pfam; PF07952; Toxin trans; 1.
CC PRINTS; PR00760; BONTOKILYSIN.
CC PRODOM; PD001963; Botulinum; 1.
CC PROSITE; PS00142; ZINC_PROTEASE; 1.
CC Direct protein sequencing; Hydrolyase; Metal-binding; Metalloprotease;
CC Neurotoxin; Protease; Toxin; Transmembrane; Zinc.
CC INIT MET 0
CC CHAIN 1 421 Botulinum neurotoxin E light chain.
CC CHAIN 422 1250 Botulinum neurotoxin E heavy chain.
CC ACT_SITE 212 212 By similarity.
CC METAL 211 211 Zinc (catalytic) (By similarity).
CC METAL 215 215 Zinc (catalytic) (By similarity).
CC DISULFID 411 425 Interchain (between light and heavy
CC chains) (Probable).
CC CONFLICT 229 229 K -> M (in Ref. 2).
CC SEQUENCE 1250 AA; 143266 MW; 8171B5B2C2312857 CRC64;

CC Query Match 73.8%; Score 568.5; DB 1; Length 1250;
CC Best Local Similarity 71.0%; Pred. No. 5.9e-38;
CC Matches 103; Conservative 26; Mismatches 15; Indels 1; Gaps 1;

CC 1 SYTNDKILLYFNKLYKIKNSILDMRYENKFKIDISGYGNSINGDVYIYSTNRNQF 60
CC 828 SYTDDKILISYFNKFKFKIKSSVLNRYKNDKYVDTSYDSDNININGDVYKYPTNKQF 887

CC 61 GIYSKSPSEVNIQNDIIYNGRYONFSISFWVRIPKYFNK-VNLNNEYTIIDCIRNNNS 119
CC 888 GIYNDKLSVNIQNDYIIYDKNKYNFISFWVRIPNYDKNIVNVNNEYTIINCMDRNNNS 947

CC 120 GWKISLNVNKKIITWLTQDTAGNNQKL 144
CC 948 GWKVSILNHNELIWTLDQNSGINKL 972

CC RESULT 9
CC Q8K2M3 CLOBU PRELIMINARY; PRT; 1252 AA.
CC ID Q8K2M3 CLOBU PRELIMINARY; PRT; 1252 AA.
CC AC Q8K2M3; 2-412.
CC DT 01-OCT-2002 (TrEMBLrel. 22, Created)
CC DT 01-OCT-2002 (TrEMBLrel. 22, Last sequence update)
CC DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
CC DE Type E botulinum toxin.
CC GN Name-bont/E; butyricum.
CC OS Clostridium butyricum.
CC OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
CC OC Clostridium.
CC OX NCBI_TaxID=1492;
CC RN [1]
CC RP NUCLEOTIDE SEQUENCE.
CC STRAIN=BL 6340/ATCC 43755/BL 5520/KZ 147;
CC MEDLINE=20509829; PubMed=1105954;
CC DOI=10.1128/AEM.66.11.4992-4997.2000;
CC Wang X., Maegawa T., Karasawa T., Kozaki S., Tsukamoto K., Gyobu Y.,
CC Yamakawa K., Oguma K., Sakaguchi Y., Nakamura S.;
CC "Genetic analysis of type E botulinum toxin-producing Clostridium
CC butyricum strains.";
CC Appl. Environ. Microbiol. 66:4992-4997(2000).
CC EMBL; AB039264; BAB12249.1; -; Genomic DNA.
CC HSSP; Q45894; 1E1H.
CC SMR; Q9FAR6; 5-415.
CC GO; GO:0016021; C:integral to membrane; IEA.
CC GO; GO:0008237; P:metallopeptidase activity; IEA.
CC GO; GO:0009405; P:pathogenesis; IEA.
CC GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
CC InterPro; IPR011591; Botulinum.
CC InterPro; IPR000395; Peptidase M27.
CC InterPro; IPR006025; Pept M Zn BS.
CC Pfam; PF01742; Peptidase M27; 1.
CC PRINTS; PR00760; BONTOKILYSIN.
CC PRODOM; PD001963; Botulinum; 1.

RC STRAIN=BL 5262;
RA Tsukamoto K., Mukamoto M., Kohda T., Ihara H., Wang X., Maegawa T.,
RA Nakamura S., Karasawa T., Kozaki S.;
RL Submitted (JUL-2002) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB088207; BAC05434.1; -; Genomic DNA.
DR HSSP; Q45894; 1E1H.
DR SMR; Q8K2M3; 2-412.
DR GO; GO:0016021; C:integral to membrane; IEA.
DR GO; GO:0008237; P:metallopeptidase activity; IEA.
DR GO; GO:0009405; P:pathogenesis; IEA.
DR GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR006025; Pept M Zn BS.
DR Pfam; PF01742; Peptidase M27; 1.
DR PRINTS; PR00760; BONTOKILYSIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
DR SEQUENCE 1252 AA; 143510 MW; 41B633BB744D3B41 CRC64;

CC Query Match 73.8%; Score 568.5; DB 2; Length 1252;
CC Best Local Similarity 71.0%; Pred. No. 5.9e-38;
CC Matches 103; Conservative 26; Mismatches 15; Indels 1; Gaps 1;

CC 1 SYTNDKILLYFNKLYKIKNSILDMRYENKFKIDISGYGNSINGDVYIYSTNRNQF 60
CC 829 SYTDDKILISYFNKFKFKIKSSVLNRYKNDKYVDTSYDSDNININGDVYKYPTNKQF 888

CC 61 GIYSKSPSEVNIQNDIIYNGRYONFSISFWVRIPKYFNK-VNLNNEYTIIDCIRNNNS 119
CC 889 GIYNDKLSVNIQNDYIIYDKNKYNFISFWVRIPNYDKNIVNVNNEYTIINCMDRNNNS 948

CC 120 GWKISLNVNKKIITWLTQDTAGNNQKL 144
CC 949 GWKVSILNHNELIWTLDQNSGINKL 973

CC RESULT 10
CC Q9FAR6 CLOBU PRELIMINARY; PRT; 1255 AA.
CC ID Q9FAR6 CLOBU PRELIMINARY; PRT; 1255 AA.
CC AC Q9FAR6; 16, Created)
CC DT 01-MAR-2001 (TrEMBLrel. 16, Last sequence update)
CC DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
CC DE Type E botulinum toxin.
CC GN Name-bont/E; butyricum.
CC OS Clostridium butyricum.
CC OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
CC OC Clostridium.
CC OX NCBI_TaxID=1492;
CC RN [1]
CC RP NUCLEOTIDE SEQUENCE.
CC STRAIN=BL 6340/ATCC 43755/BL 5520/KZ 147;
CC MEDLINE=20509829; PubMed=1105954;
CC DOI=10.1128/AEM.66.11.4992-4997.2000;
CC Wang X., Maegawa T., Karasawa T., Kozaki S., Tsukamoto K., Gyobu Y.,
CC Yamakawa K., Oguma K., Sakaguchi Y., Nakamura S.;
CC "Genetic analysis of type E botulinum toxin-producing Clostridium
CC butyricum strains.";
CC Appl. Environ. Microbiol. 66:4992-4997(2000).
CC EMBL; AB039264; BAB12249.1; -; Genomic DNA.
CC HSSP; Q45894; 1E1H.
CC SMR; Q9FAR6; 5-415.
CC GO; GO:0016021; C:integral to membrane; IEA.
CC GO; GO:0008237; P:metallopeptidase activity; IEA.
CC GO; GO:0009405; P:pathogenesis; IEA.
CC GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
CC InterPro; IPR011591; Botulinum.
CC InterPro; IPR000395; Peptidase M27.
CC InterPro; IPR006025; Pept M Zn BS.
CC Pfam; PF01742; Peptidase M27; 1.
CC PRINTS; PR00760; BONTOKILYSIN.
CC PRODOM; PD001963; Botulinum; 1.

RX MEDLINE=89350959; PubMed=2669749;
RA Betley M.J., Somers E., Dasgupta B.R.;
RT "Characterization of botulinum type A neurotoxin gene: delineation of
RL the N-terminal encoding region.";
RN Biochem. Biophys. Res. Commun. 162:1388-1395(1989).
[5]
RX NUCLEOTIDE SEQUENCE OF 1-18.
RA STRAIN=Type A / NIH;
RP MEDLINE=96096783; PubMed=8521962; DOI=10.1016/0014-5793(95)01241-5;
RX Fujita R., Fujinaga Y., Inoue K., Nakajima H., Kumon H., Oguma K.;
RA "Molecular characterization of two forms of nontoxic-nonhemagglutinin
RT components of Clostridium botulinum type A progenitor toxins.";
RL FEBS Lett. 376:41-44(1995).
[6]
RX PROTEIN SEQUENCE OF 1-16.
RA MEDLINE=84178501; PubMed=6370252;
RA Schmidt J.J., Sartymoorthy V., Dasgupta B.R.;
RT "Partial amino acid sequence of the heavy and light chains of
RL botulinum neurotoxin type A.";
RN Biochem. Biophys. Res. Commun. 119:900-904(1984).
[7]
RX PROTEIN SEQUENCE OF 1-46.
RA Dasgupta B.R., Foley J., Niece R.;
RT "Partial sequence of the light chain of botulinum neurotoxin type A.";
RL Biochemistry 26:4162-4162(1987).
[8]
RX PROTEIN SEQUENCE OF 1-5 AND 444-456.
RA MEDLINE=91120847; PubMed=2126206; DOI=10.1016/0300-9084(90)90048-L;
RA Dasgupta B.R., Dekleva M.L.;
RT "Botulinum neurotoxin type A: sequence of amino acids at the N-
RL terminus and around the nicking site.";
RN Biochimie 72:661-664(1990).
[9]
RX PROTEIN SEQUENCE OF 448-474 AND 872-895.
RA MEDLINE=89024662; PubMed=3178218;
RA Sartymoorthy V., Dasgupta B.R., Foley J., Niece R.L.;
RT "Botulinum neurotoxin type A: cleavage of the heavy chain into two
RL halves and their partial sequences.";
RN Arch. Biochem. Biophys. 266:142-151(1988).
[10]
RX PROTEIN SEQUENCE OF 448-482.
RA MEDLINE=85285016; PubMed=3896784;
RA Shone C.C., Hambleton P., Melling J.;
RT "Inactivation of Clostridium botulinum type A neurotoxin by trypsin
RL and purification of two tryptic fragments. Proteolytic action near the
COOH-terminus of the heavy subunit destroys toxin-binding activity.";
RN Eur. J. Biochem. 151:75-82(1985).
[11]
RX PROTEIN SEQUENCE OF 866-879 AND 1147-1218.
RA PubMed=8397793;
RA Gimenez J.A., Dasgupta B.R.;
RT "Botulinum type A neurotoxin digested with pepsin yields 132, 97, 72,
RL 45, 42, and 18 kD fragments.";
RN J. Protein Chem. 12:351-363(1993).
[12]
RX IDENTIFICATION OF SUBSTRATE.
RA MEDLINE=94063091; PubMed=8243676; DOI=10.1016/0014-5793(93)80448-4;
RA Schiavo G., Santucci A., Dasgupta B.R., Mehta P.P., Jontes J.,
RA Benfenati F., Wilson M.C., Montecucco C.;
RT "Botulinum neurotoxins serotypes A and E cleave SNAP-25 at distinct
RL COOH-terminal peptide bonds.";
RN FEBS Lett. 335:99-103(1993).
[13]
RX IDENTIFICATION OF SUBSTRATE.
RA MEDLINE=94124495; PubMed=8294407;
RA Binz T., Blasi J., Yasasaki S., Baumeister A., Link E., Suedhof T.C.,
RA Jahn R., Niemann H.;
RT "Proteolysis of SNAP-25 by types E and A botulinum neurotoxins.";
RL J. Biol. Chem. 269:1617-1620(1994).
[14]
RX MUTAGENESIS OF GLU-261, PHE-265 AND TYR-365.
RA MEDLINE=21565941; PubMed=11700044; DOI=10.1006/bbrc.2001.5911;
RA Rigoni M., Caccin P., Johnson E.A., Montecucco C., Rossetto O.;
RT "Site-directed mutagenesis identifies active-site residues of the
RL light chain of botulinum neurotoxin type A.";
RN Biochem. Biophys. Res. Commun. 288:1231-1237(2001).
[15]
RX X-RAY CRYSTALLOGRAPHY (3.3 ÅNGSTRÖMS).
RA MEDLINE=98455071; PubMed=9783750;
RA Lacy D.B., Tepp W., Cohen A.C., Dasgupta B.R., Stevens R.C.;
RT "Crystal structure of botulinum neurotoxin type A and implications for
RL toxicity.";
RN Nat. Struct. Biol. 5:898-902(1998).
CC -1- FUNCTION: Inhibits acetylcholine release. The botulinum toxin
CC binds with high affinity to peripheral neuronal presynaptic
CC membrane, is then internalized by receptor-mediated endocytosis.
CC The C-terminus of the heavy chain (H) is responsible for the
CC adherence of the toxin to the cell surface while the N-terminus
CC mediates transport of the light chain from the endocytic vesicle
CC to the cytosol. After translocation, the light chain (L)
CC hydrolyzes the 197-Gln-Arg-198 bond in SNAP-25, thereby blocking
CC neurotransmitter release. Inhibition of acetylcholine release
CC results in flaccid paralysis, with frequent heart or respiratory
CC failure.
CC -1- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -1- COFACTOR: Binds 1 zinc ion per subunit.
CC -1- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H).
CC -1- SUBCELLULAR LOCATION: Secreted.
CC -1- PHARMACEUTICAL: Available under the name BOTOX (Allergan) for the
CC treatment of strabismus and blepharospasm associated with dystonia
CC and cervical dystonia. Also used for the treatment of hemifacial
CC spasm and a number of other neurological disorders characterized
CC by abnormal muscle contraction.
CC -1- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
CC -1- SIMILARITY: Belongs to the peptidase M27 family.
CC -1- DATABASE: NAME=BOTOX product information Web site;
CC WWW="http://www.botox.com/site/";
CC -1- DATABASE: NAME=Protein Spotlight; NOTE=Issue 19 of February 2002;
CC WWW="http://www.expasy.org/spotlight/back_issues/sptl019.shtml".

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CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.
DR EMBL; X52066; CAA36289.1; -; Genomic DNA.
DR EMBL; X30196; AAA23262.1; -; Genomic DNA.
DR EMBL; X92973; CAA63551.1; -; Genomic DNA.
DR EMBL; D67030; BAA11051.1; -; Genomic DNA.
DR EMBL; M27892; AAA23269.1; -; Genomic DNA.
DR PIR; A35294; BTCLAB.
DR PDB; 3BTA; X-ray; A=1-1295.
DR MEROPS; M27.002; -.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR InterPro; IPR000395; Peptidase_M27.
DR InterPro; IPR012928; Toxin_recept_bd_N.
DR InterPro; IPR012500; Toxin_trans.
DR Pfam; PF01742; Peptidase_M27; 1.
DR Pfam; PF07953; Toxin_R_bind_N; 1.
DR Pfam; PF07952; Toxin_trans; 1.
DR PRINTS; PR00760; BONTOXILYSIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; 1.
KW 3D-structure; Direct protein sequencing; Hydrolase; Metal-binding;
KW Metalloprotease; Neurotoxin; Pharmaceutical; Protease; Toxin;
KW Transmembrane; Zinc. 0
FT INIT_MET 0
FT CHAIN 1 447 Botulinum neurotoxin A light-chain.
FT CHAIN 448 1295 Botulinum neurotoxin A heavy-chain.
FT TRANSMEM 626 646 Potential.

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FT TRANSMEM 655 675 Potential.
FT ACT SITE 223 223 Zinc (catalytic).
FT METAL 222 222 Zinc (catalytic).
FT METAL 226 226 Zinc (catalytic).
FT METAL 261 261 Interchain (between light and heavy
FT DISULFID 429 453 chains).
FT DISULFID 1234 1279 V -> A.
FT VARIANT 26 26 E->A: Drastic decrease in enzymatic
FT MUTAGEN 261 261

Query Match 49.2%; Score 378.5; DB 1; Length 1295;
Best Local Similarity 48.3%; Pred. No. 2.3e-22;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;

Qy 2 YTNCKILLYFNKLYKKIKNSILDMRYENKFKFIDISGYSNIGSDVYIYSTNRQFG 61
Db 856 YVDNQRLSTFTYKNTINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 914
Qy 62 IYSSKPSVNIQNDIYNGYQNFISFWIRIPKYNKVLNNEVYIICIRNNNSGW 121
Db 915 LFNLESSKIEVLKNAIVNSMYENFSTFWIRIPKYNFNSISLNEYIINCM-ENNSGW 973

Qy 122 KISLNYNKIIWTLODTAGNNKL 144
Db 974 KVSILNYGEIITWLTQTOEIQRV 996

RESULT 14
Q7B8V4 CLOBO PRELIMINARY; PRT; 1296 AA.
AC Q7B8V4
DT 10-MAY-2005 (TRENBLrel. 30, Created)
DT 10-MAY-2005 (TRENBLrel. 30, Last sequence update)
DE BoNT/A (Neurotoxin BoNT).
GN Name=boNT/a;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
RN NCBI_TaxID=1491;
[1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Hall A-hyper;
RX MEDLINE=22617869; PubMed=12732962; DOI=10.1007/s00284-002-3851-1;
RA Dineen S.S., Bradshaw M., Johnson E.A.;
RT "Neurotoxin gene clusters in Clostridium botulinum type A strains:
sequence comparison and evolutionary implications.";
RL Curr. Microbiol. 46:345-352(2003).
[2]
RN NUCLEOTIDE SEQUENCE.
RP STRAIN=Allergan-Hall A;
RC MEDLINE=22919384; PubMed=14557061; DOI=10.1016/S0378-1119(03)00792-3;
RA Zhang L., Lin W.J., Li S., Aoki K.R.;
RT "Complete DNA sequences of the botulinum neurotoxin complex of
Clostridium botulinum type A-Hall (Allergan) strain.";
RL Gene 315:21-32(2003).
DR EMBL; AF461540; AAM75961.1; -; Genomic_DNA.
DR EMBL; AF468749; AAQ06331.1; -; Genomic_DNA.
KW Neurotoxin.
SQ SEQUENCE 1296 AA; 149425 MW; DEABCF2754AE43B6 CRC64;

Query Match 49.2%; Score 378.5; DB 2; Length 1296;
Best Local Similarity 48.3%; Pred. No. 2.3e-22;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;

Qy 2 YTNCKILLYFNKLYKKIKNSILDMRYENKFKFIDISGYSNIGSDVYIYSTNRQFG 61
Db 856 YVDNQRLSTFTYKNTINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 915
Qy 62 IYSSKPSVNIQNDIYNGYQNFISFWIRIPKYNKVLNNEVYIICIRNNNSGW 121
Db 916 LFNLESSKIEVLKNAIVNSMYENFSTFWIRIPKYNFNSISLNEYIINCM-ENNSGW 974
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Qy 122 KISLNYNKIIWTLODTAGNNKL 144
Db 975 KVSILNYGEIITWLTQTOEIQRV 997

RESULT 15
BXA2 CLOBO STANDARD; PRT; 1295 AA.
AC Q45894; P77780;
DT 28-FEB-2003 (Rel. 41, Created)
DT 28-FEB-2003 (Rel. 41, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type A precursor (EC 3.4.24.69) (BoNT/A)
DE (Bontoxilysin A) (BOTOX) [Contains: Botulinum neurotoxin A light-
chain; Botulinum neurotoxin A heavy-chain].
GN Name=botA; Synonyms=atx, bna;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
RN NCBI_TaxID=1491;
[1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / Kyoto-F;
RX MEDLINE=94143603; PubMed=8310180; DOI=10.1016/0923-2508(93)90004-L;
RA Williams A., East A.K., Lawson P.A., Collins M.D.;
RT "Sequence of the gene coding for the neurotoxin of Clostridium
botulinum type A associated with infant botulism: comparison with
other clostridial neurotoxins.";
RL Res. Microbiol. 144:547-556(1993).
[2]
RN NUCLEOTIDE SEQUENCE OF 1-65.
RC STRAIN=Type A / Kyoto-F;
RX MEDLINE=97016817; PubMed=8863443;
RA East A.K., Bhandari M., Stacey J.M., Campbell K.D., Collins M.D.;
RT "Organization and phylogenetic interrelationships of genes encoding
components of the botulinum toxin complex in proteolytic Clostridium
botulinum types A, B, and F: evidence of chimeric sequences in the
gene encoding the nontoxic nonhemagglutinin component.";
RL Int. J. Syst. Bacteriol. 46:1105-1112(1996).
CC -!- FUNCTION: Inhibits acetylcholine release. The botulinum toxin
binds with high affinity to peripheral neuronal presynaptic
membrane, is then internalized by receptor-mediated endocytosis.
The C-terminus of the heavy chain (H) is responsible for the
adherence of the toxin to the cell surface while the N-terminus
mediates transport of the light chain from the endocytic vesicle
to the cytosol. After translocation, the light chain (L)
hydrolyzes the 197-Gln-|-Arg-198 bond in SNAP-25, thereby blocking
neurotransmitter release. Inhibition of acetylcholine release
results in flaccid paralysis, with frequent heart or respiratory
failure (By similarity).
CC -!- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
detected action on small molecule substrates.
CC -!- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
heavy chain (H) (By similarity).
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- MISCELLANEOUS: There are seven antigenically distinct forms of
botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
CC -!- SIMILARITY: Belongs to the peptidase M27 family.
CC This Swiss-Prot entry is copyright. It is produced through a collaboration
between the Swiss Institute of Bioinformatics and the EMBL outstation -
the European Bioinformatics Institute. There are no restrictions on its
use as long as its content is in no way modified and this statement is not
removed.
CC EMBL; X73423; CAA51824.1; -; Genomic DNA.
CC EMBL; X87974; CAA61234.1; -; Genomic DNA.
CC PIR; I40645; I40645.
CC PDB; 1B1H; X-ray; A/C=9-249, B/D=250-415.
CC MEROPS; M27.002; -.
CC InterPro; IPR011591; Botulinum.
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DR InterPro; IPR006025; Pept_M_Zn_BS.
 DR InterPro; IPR000395; Peptidase_M27.
 DR InterPro; IPR012928; Toxin_recpt_bd_N.
 DR InterPro; IPR012500; Toxin_trans.
 DR Pfam; PF01742; Peptidase_M27; 1.
 DR Pfam; PF07953; Toxin_R_bind_N; 1.
 DR Pfam; PF07952; Toxin_trans_1.
 DR PRINTS; PR00760; BONTOLILYSIN.
 DR PRODOM; PD001963; Botulinum; 1.
 DR PROSITE; PS00142; ZINC_PROTEASE; FALSE_NEG.
 KW 3D-structure; Hydrolase; Metal-binding; Metalloprotease; Neurotoxin;
 KW Protease; Toxin; Transmembrane; Zinc.
 FT INIT_MET 0 0 By similarity.
 FT CHAIN 1 447 Botulinum neurotoxin A light-chain.
 FT TRANS 448 1295 Botulinum neurotoxin A heavy-chain.
 FT TRANSMEM 626 646 Potential.
 FT TRANSMEM 655 675 Potential.
 FT ACT_SITE 223 223 By similarity.
 FT METAL 222 222 Zinc (catalytic) (By similarity).
 FT METAL 226 226 Zinc (catalytic) (By similarity).
 FT DISULFID 429 453 Interchain (between light and heavy chains) (By similarity).
 FT DISULFID 1234 1279 By similarity.
 FT SEQUENCE 1295 AA; 149280 MW; 5DA04A13D98D6372 CRC64;

Query Match 49.0%; Score 377.5; DB 1; Length 1295;
 Best Local Similarity 49.0%; Pred. No. 2.8e-22;
 Matches 70; Conservative 29; Mismatches 43; Indels 1; Gaps 1;

QY 2 YTNKILILYFNKLYKKIKNSILDMRYENKFKIDISGYSGNISINGDVVIYSTNRNQFG 61
 DB 855 YVDNKKLLSTFTEYIKIVNTSILSIYVKKDDLDLSRYGAKINIGDRVYDSDIKKQIK 914
 QY 62 IYSSKPSEVNIAQNNDIYNGRYQNFSGISFVWRIPKYNKVNLANEYTIIDCIENNSGW 121
 DB 915 LINLESSTIEVLKNAIVNSMYENFSTSPWIKIPKYSKINLANEVTIINCI-ENNSGW 973
 QY 122 KISLNYNKLIWTLODTAGNOKL 144
 DB 974 KVSILNYGEIITWLODNKQNIQRV 996

Search completed: March 2, 2006, 00:46:24
 Job time : 74.8376 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:46:47 ; Search time 17.7077 Seconds
(without alignments)
672.325 Million cell updates/sec

Title: US-08-981-087B-2
Perfect score: 770
Sequence: 1 SYTNDKILLYFNKLYKKIK.....LNNKIIWTLDQTAGNNQKL 144

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 572060 seqs, 82675679 residues

Total number of hits satisfying chosen parameters: 572060

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Issued Patents AA:*
1: /cgn2_6/ptodata/1/1aa/5 COMB.pep.*
2: /cgn2_6/ptodata/1/1aa/6 COMB.pep.*
3: /cgn2_6/ptodata/1/1aa/H_COMB.pep.*
4: /cgn2_6/ptodata/1/1aa/PCTUS_COMB.pep.*
5: /cgn2_6/ptodata/1/1aa/RE_COMB.pep.*
6: /cgn2_6/ptodata/1/1aa/backfiles1.pep.*

pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	378.5	49.2	1296	1 US-08-480-604A-28	Sequence 28, Appl
2	378.5	49.2	1296	1 US-08-405-496A-28	Sequence 28, Appl
3	378.5	49.2	1296	2 US-08-915-136-28	Sequence 28, Appl
4	378.5	49.2	1296	2 US-09-084-517-28	Sequence 28, Appl
5	377.5	49.0	848	2 US-10-360-101-219	Sequence 219, App
6	371.5	48.2	438	1 US-08-480-604A-23	Sequence 23, Appl
7	371.5	48.2	438	1 US-08-405-496A-23	Sequence 23, Appl
8	371.5	48.2	438	2 US-08-915-136-23	Sequence 23, Appl
9	371.5	48.2	438	2 US-09-084-517-23	Sequence 23, Appl
10	371.5	48.2	462	1 US-08-480-604A-26	Sequence 26, Appl
11	371.5	48.2	462	1 US-08-405-496A-26	Sequence 26, Appl
12	371.5	48.2	462	2 US-08-915-136-26	Sequence 26, Appl
13	371.5	48.2	462	2 US-09-084-517-26	Sequence 26, Appl
14	355	46.1	1169	2 US-09-255-829-20	Sequence 20, Appl
15	355	46.1	1290	2 US-10-360-101-220	Sequence 220, App
16	277.5	36.0	382	2 US-09-288-328A-9	Sequence 9, Appli
17	277.5	36.0	382	2 US-09-548-409B-9	Sequence 9, Appli
18	209	27.1	452	1 US-07-618-312A-2	Sequence 2, Appli
19	209	27.1	452	1 US-08-280-228-2	Sequence 2, Appli
20	206	26.8	452	1 US-07-618-312A-4	Sequence 4, Appli
21	206	26.8	452	1 US-08-280-228-4	Sequence 4, Appli
22	206	26.8	618	1 US-08-868-381A-5	Sequence 5, Appli
23	206	26.8	853	1 US-08-913-880C-17	Sequence 17, Appl
24	206	26.8	858	2 US-08-913-880C-16	Sequence 16, Appl
25	206	26.8	860	2 US-08-913-880C-15	Sequence 15, Appl
26	206	26.8	862	2 US-08-913-880C-14	Sequence 14, Appl
27	206	26.8	865	2 US-08-913-880C-13	Sequence 13, Appl

28	206	26.8	866	2 US-08-913-880C-12	Sequence 12, Appl
29	206	26.8	874	2 US-08-913-880C-11	Sequence 11, Appl
30	206	26.8	875	2 US-08-913-880C-10	Sequence 10, Appl
31	206	26.8	1315	2 US-08-913-880C-1	Sequence 1, Appli
32	191	24.8	452	1 US-08-110-786A-8	Sequence 8, Appli
33	100.5	13.1	464	1 US-08-553-619B-9	Sequence 9, Appli
34	96	12.5	2391	1 US-08-446-855A-2	Sequence 2, Appli
35	96	12.5	2391	2 US-09-150-741-2	Sequence 2, Appli
36	94	12.2	394	2 US-09-079-030-83	Sequence 83, Appl
37	94	12.2	840	2 US-09-079-030-214	Sequence 214, App
38	94	12.2	4536	2 US-09-180-422B-27	Sequence 27, Appl
39	94	12.2	4536	2 US-09-079-030-1	Sequence 1, Appli
40	94	12.2	4563	2 US-09-108-006C-1	Sequence 1, Appli
41	94	12.2	4563	2 US-09-538-092-842	Sequence 842, App
42	92.5	12.0	912	2 US-09-134-001C-2993	Sequence 2993, Ap
43	92.5	12.0	993	2 US-08-836-687B-30	Sequence 30, Appl
44	92	11.9	1381	2 US-09-662-254B-20	Sequence 20, Appl
45	91.5	11.9	467	2 US-08-495-484-12	Sequence 12, Appl

ALIGNMENTS

RESULT 1
US-08-480-604A-28
Sequence 28, Application US/08480604A
Patent No. 5736139
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
APPLICANT: THALLEY, BRUCE S.
APPLICANT: PADHYE, NISHA V.
APPLICANT: FIRCA, JOSEPH R.
APPLICANT: STAFFORD, DOUGLAS C.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND PREVENTION OF C. DIFFICILE DISEASE
TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 32
CORRESPONDENCE ADDRESS:
ADDRESSEE: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/480,604A
FILING DATE: 07-JUN-1995
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/422,711
FILING DATE: 14-APR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/405,496
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027

```
/ REFERENCE/DOCKET NUMBER: OPHD-01763
/ TELECOMMUNICATION INFORMATION:
/ TELEPHONE: (415) 705-8410
/ TELEFAX: (415) 397-8338
/ INFORMATION FOR SEQ ID NO: 28:
/ SEQUENCE CHARACTERISTICS:
/ LENGTH: 1296 amino acids
/ TYPE: amino acid
/ TOPOLOGY: linear
/ MOLECULE TYPE: protein
/ US-08-405-496A-28

Query Match          49.2%; Score 378.5; DB 1; Length 1296;
Best Local Similarity 48.3%; Pred. No. 5.8e-31;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;

QY 2 YTNDKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQFG 61
Db 856 YVDNQRLSLSTFTFYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 915
QY 62 IYSSKPEVNIAQNNDIYNGRYQNFSPFWRIPKYNKVNLNNEYTIIDCIRNNNSGW 121
Db 916 LFNLESSKIEVLKNAIVNGMYENFSTFWIRIPKYNFNSISLNNEYTIINCM-ENNSGW 974
QY 122 KISLNNKIITWLTQDTAGNNQKL 144
Db 975 KVSILNGEIIWLTQDTQEIQRV 997

RESULT 2
US-08-405-496A-28
/ Sequence 28, Application US/08405496A
/ Patent No. 5919665
/ GENERAL INFORMATION:
/ APPLICANT: WILLIAMS, JAMES A.
/ TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM
/ TITLE OF INVENTION: NEUROTOXIN
/ NUMBER OF SEQUENCES: 30
/ CORRESPONDENCE ADDRESS:
/ ADDRESSEE: MEDLEN & CARROLL, LLP
/ STREET: 220 MONTGOMERY STREET, SUITE 2200
/ CITY: SAN FRANCISCO
/ STATE: CALIFORNIA
/ COUNTRY: USA
/ ZIP: 94104
/ COMPUTER READABLE FORM:
/ MEDIUM TYPE: Floppy disk
/ COMPUTER: IBM PC compatible
/ OPERATING SYSTEM: PC-DOS/MS-DOS
/ SOFTWARE: Patent In Release #1.0, Version #1.30
/ CURRENT APPLICATION DATA:
/ APPLICATION NUMBER: US/08/405,496A
/ FILING DATE: 16-MAR-1995
/ CLASSIFICATION: 424
/ PRIOR APPLICATION DATA:
/ APPLICATION NUMBER: US 08/329,154
/ FILING DATE: 25-OCT-1994
/ PRIOR APPLICATION DATA:
/ APPLICATION NUMBER: US 08/161,907
/ FILING DATE: 02-DEC-1993
/ PRIOR APPLICATION DATA:
/ APPLICATION NUMBER: US 07/985,321
/ FILING DATE: 04-DEC-1992
/ PRIOR APPLICATION DATA:
/ APPLICATION NUMBER: US 07/429,791
/ FILING DATE: 31-OCT-1989
/ ATTORNEY/AGENT INFORMATION:
/ NAME: INGOLIA, DIANE E.
/ REGISTRATION NUMBER: 40,027
/ REFERENCE/DOCKET NUMBER: OPHD-01308
/ TELECOMMUNICATION INFORMATION:
/ TELEPHONE: (415) 705-8410
/ TELEFAX: (415) 397-8338

/ INFORMATION FOR SEQ ID NO: 28:
/ SEQUENCE CHARACTERISTICS:
/ LENGTH: 1296 amino acids
/ TYPE: amino acid
/ TOPOLOGY: linear
/ MOLECULE TYPE: protein
/ US-08-405-496A-28

Query Match          49.2%; Score 378.5; DB 1; Length 1296;
Best Local Similarity 48.3%; Pred. No. 5.8e-31;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;

QY 2 YTNDKILILYFNKLYKKIKDMSILDMRYENKFKIDISGYGNSISINGDVYIYSTNRNQFG 61
Db 856 YVDNQRLSLSTFTFYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 915
QY 62 IYSSKPEVNIAQNNDIYNGRYQNFSPFWRIPKYNKVNLNNEYTIIDCIRNNNSGW 121
Db 916 LFNLESSKIEVLKNAIVNGMYENFSTFWIRIPKYNFNSISLNNEYTIINCM-ENNSGW 974
QY 122 KISLNNKIITWLTQDTAGNNQKL 144
Db 975 KVSILNGEIIWLTQDTQEIQRV 997

RESULT 3
US-08-915-136-28
/ Sequence 28, Application US/08915136
/ Patent No. 6290960
/ GENERAL INFORMATION:
/ APPLICANT: KINK, JOHN A.
/ APPLICANT: THALLEY, BRUCE S.
/ APPLICANT: PADHYE, NISHA V.
/ APPLICANT: FIRCA, JOSEPH R.
/ APPLICANT: STAFFORD, DOUGLAS C.
/ TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
/ PREVENTION OF C. DIFFICILE DISEASE
/ NUMBER OF SEQUENCES: 32
/ CORRESPONDENCE ADDRESS:
/ ADDRESSEE: MEDLEN & CARROLL, LLP
/ STREET: 220 MONTGOMERY STREET, SUITE 2200
/ CITY: SAN FRANCISCO
/ STATE: CALIFORNIA
/ COUNTRY: UNITED STATES OF AMERICA
/ ZIP: 94104
/ COMPUTER READABLE FORM:
/ MEDIUM TYPE: Floppy disk
/ COMPUTER: IBM PC compatible
/ OPERATING SYSTEM: PC-DOS/MS-DOS
/ SOFTWARE: Patent In Release #1.0, Version #1.30
/ CURRENT APPLICATION DATA:
/ APPLICATION NUMBER: US/08/915,136
/ FILING DATE:
/ CLASSIFICATION:
/ PRIOR APPLICATION DATA:
/ APPLICATION NUMBER: 08/480,604
/ FILING DATE:
/ PRIOR APPLICATION DATA:
/ APPLICATION NUMBER: US 08/405,496
/ FILING DATE: 16-MAR-1995
/ PRIOR APPLICATION DATA:
/ APPLICATION NUMBER: US 08/329,154
/ FILING DATE: 25-OCT-1994
/ PRIOR APPLICATION DATA:
/ APPLICATION NUMBER: US 08/161,907
/ FILING DATE: 02-DEC-1993
/ PRIOR APPLICATION DATA:
/ APPLICATION NUMBER: US 07/985,321
/ FILING DATE: 04-DEC-1992
/ PRIOR APPLICATION DATA:
/ APPLICATION NUMBER: US 07/429,791
/ FILING DATE: 31-OCT-1989
/ ATTORNEY/AGENT INFORMATION:
```

NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40, 027
REFERENCE/DOCKET NUMBER: OPHD-01763
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 28:
SEQUENCE CHARACTERISTICS:
LENGTH: 1296 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-09-915-136-28

Query Match 49.2%; Score 378.5; DB 2; Length 1296;
Best Local Similarity 48.3%; Pred. No. 5.8e-31;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;
QY 2 YTNDKILILYFNKLYKKIKNSILDMRYENKFDIDISGYGNSISINGDVYIYSTNRNQFG 61
Db 856 YVDNQRLLSTFTTEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 915
QY 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDICIRNNNSGW 121
Db 916 LFNLESSKIEVLKNAIVNMYENFSTFSWIRIPKYNFNSISLNNEYTIINCM-ENNSGW 974
QY 122 KISLNNKIIWTLODTAGNOKL 144
Db 975 KVSILNYGEIITWLODTQEIQRV 997

RESULT 4

US-09-084-517-28
Sequence 28, Application US/09084517
Patent No. 6613329
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
APPLICANT: WILLIAMS, JAMES A.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
OPERATING SYSTEM: PC-DOS/MS-DOS
NUMBER OF SEQUENCES: 30
CORRESPONDENCE ADDRESS:
ADDRESSEE: HAVERTOCK, MEDLEN & CARROLL
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/084,517
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:

NAME: CARROLL, PETER G.
REGISTRATION NUMBER: 32,837
REFERENCE/DOCKET NUMBER: OPHD-01610
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 28:
SEQUENCE CHARACTERISTICS:
LENGTH: 1296 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-09-084-517-28

Query Match 49.2%; Score 378.5; DB 2; Length 1296;
Best Local Similarity 48.3%; Pred. No. 5.8e-31;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;
QY 2 YTNDKILILYFNKLYKKIKNSILDMRYENKFDIDISGYGNSISINGDVYIYSTNRNQFG 61
Db 856 YVDNQRLLSTFTTEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 915
QY 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDICIRNNNSGW 121
Db 916 LFNLESSKIEVLKNAIVNMYENFSTFSWIRIPKYNFNSISLNNEYTIINCM-ENNSGW 974
QY 122 KISLNNKIIWTLODTAGNOKL 144
Db 975 KVSILNYGEIITWLODTQEIQRV 997

RESULT 5

US-10-360-101-219
Sequence 219, Application US/10360101
Patent No. 8861236
GENERAL INFORMATION:
APPLICANT: Moll, Gert N.
APPLICANT: Leenhouts, Cornelis J.
TITLE OF INVENTION: Export and modification of (poly)peptide in the lantibiotic way
FILE REFERENCE: 2183-5673
CURRENT APPLICATION NUMBER: US/10/360,101
CURRENT FILING DATE: 2003-02-07
PRIOR APPLICATION NUMBER: EP 02077060.8
PRIOR FILING DATE: 2002-05-24
NUMBER OF SEQ ID NOS: 309
SOFTWARE: Patent in version 3.1
SEQ ID NO 219
LENGTH: 848
TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
OTHER INFORMATION: sequence A-heavy chain of clostridium botulinum toxin type A
US-10-360-101-219

Query Match 49.0%; Score 377.5; DB 2; Length 848;
Best Local Similarity 49.0%; Pred. No. 4.2e-31;
Matches 70; Conservative 29; Mismatches 43; Indels 1; Gaps 1;
QY 2 YTNDKILILYFNKLYKKIKNSILDMRYENKFDIDISGYGNSISINGDVYIYSTNRNQFG 61
Db 408 YVDNQRLLSTFTTEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKQIQ 467
QY 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDICIRNNNSGW 121
Db 468 LFNLESSKIEVLKNAIVNMYENFSTFSWIRIPKYNFNSISLNNEYTIINCM-ENNSGW 526
QY 122 KISLNNKIIWTLODTAGNOKL 144
Db 527 KVSILNYGEIITWLODTQEIQRV 549

RESULT 6

US-08-480-604A-23

Sequence 23, Application US/08480604A
Patent No. 5736139
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
APPLICANT: THALLEY, BRUCE S.
APPLICANT: PADHYE, NISHA V.
APPLICANT: FIRCA, JOSEPH R.
APPLICANT: STAFFORD, DOUGLAS C.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 32
CORRESPONDENCE ADDRESS:
ADDRESSEE: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/480.604A
FILING DATE: 07-JUN-1995
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/422,711
FILING DATE: 14-APR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/405,496
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPD-01763
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 23:
SEQUENCE CHARACTERISTICS:
LENGTH: 438 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-480-604A-23

Query Match 48.2%; Score 371.5; DB 1; Length 438;
Best Local Similarity 49.6%; Pred. No. 7.6e-31;
Matches 68; Conservative 28; Mismatches 40; Indels 1; Gaps 1;
QY 8 LILYFNKLYKKIKDINSILDMRYENKFFIDISGYGNSISNGDVVYISTNRNQFYSSKP 67
DB 4 LLSTFTVEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKNQIQLFNLS 63
QY 68 SEVNIQAQNDIYNGRYQNFSPWVRIPKYFNKNLNNEYTIIDCIRNNNSGWKISLNY 127
DB 64 SKIEVLKNAIVNSMYENFSTFWIRIPKYNFISLNNEYTIINC-ENNSGWKISLNY 122
QY 128 NKIIWLTQDTAGNNQKL 144

Db 123 GEIIWLTQDTQEIQRV 139
RESULT 7
US-08-405-496A-23
Sequence 23, Application US/08405496A
Patent No. 5919665
GENERAL INFORMATION:
APPLICANT: WILLIAMS, JAMES A.
TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM
NEUROTOXIN
NUMBER OF SEQUENCES: 30
CORRESPONDENCE ADDRESS:
ADDRESSEE: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: USA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent in Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/405,496A
FILING DATE: 16-MAR-1995
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPD-01308
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 23:
SEQUENCE CHARACTERISTICS:
LENGTH: 438 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-405-496A-23

Query Match 48.2%; Score 371.5; DB 1; Length 438;
Best Local Similarity 49.6%; Pred. No. 7.6e-31;
Matches 68; Conservative 28; Mismatches 40; Indels 1; Gaps 1;
QY 8 LILYFNKLYKKIKDINSILDMRYENKFFIDISGYGNSISNGDVVYISTNRNQFYSSKP 67
DB 4 LLSTFTVEYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNFDPIDKNQIQLFNLS 63
QY 68 SEVNIQAQNDIYNGRYQNFSPWVRIPKYFNKNLNNEYTIIDCIRNNNSGWKISLNY 127
DB 64 SKIEVLKNAIVNSMYENFSTFWIRIPKYNFISLNNEYTIINC-ENNSGWKISLNY 122
QY 128 NKIIWLTQDTAGNNQKL 144
Db 123 GEIIWLTQDTQEIQRV 139

RESULT 8

US-08-915-136-23
; Sequence 23, Application US/08915136
; Patent No. 6290960
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; FILING DATE: US/08/915,136
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/480,604
; FILING DATE:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01763
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 23:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 438 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-08-915-136-23

Query Match 48.2%; Score 371.5; DB 2; Length 438;
Best Local Similarity 49.6%; Pred. No. 7.6e-31;
Matches 68; Conservative 28; Mismatches 40; Indels 1; Gaps 1;
QY 8 LILYFNKLYKKIKDMSILDMRYENKFFDIDISYGSNISINGDVYIYSTRNQFGIYSSKP 67
DB 4 LLSTTEYIKNTINTSILNLRYESNHLIDLRYASKINIGSKVNFDPDKNQIQLFNLES 63
QY 68 SEVNTAQNNDIYNGRYQNFSTSFVWRIPKPKVKNLNEYTIIDICIRNNNSGKISLNY 127
DB 64 SKIEVILKNAIVNMYENFSTSFWRIPKPKVNSISLNEYTIINCM-ENNNGWKVSLNY 122

QY 128 NKIIWTLQDTAGNQKL 144
DB 123 GEIIWTLQDTQEIQRV 139

RESULT 9

US-09-084-517-23
; Sequence 23, Application US/09084517
; Patent No. 6613329
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; FILING DATE: US/09/084,517
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: CARROLL, PETER G.
; REGISTRATION NUMBER: 32,837
; REFERENCE/DOCKET NUMBER: OPHD-01610
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 23:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 438 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-09-084-517-23

Query Match 48.2%; Score 371.5; DB 2; Length 438;
Best Local Similarity 49.6%; Pred. No. 7.6e-31;
Matches 68; Conservative 28; Mismatches 40; Indels 1; Gaps 1;
QY 8 LILYFNKLYKKIKDMSILDMRYENKFFDIDISYGSNISINGDVYIYSTRNQFGIYSSKP 67
DB 4 LLSTTEYIKNTINTSILNLRYESNHLIDLRYASKINIGSKVNFDPDKNQIQLFNLES 63
QY 68 SEVNTAQNNDIYNGRYQNFSTSFVWRIPKPKVKNLNEYTIIDICIRNNNSGKISLNY 127
DB 64 SKIEVILKNAIVNMYENFSTSFWRIPKPKVNSISLNEYTIINCM-ENNNGWKVSLNY 122

Qy	128 NKIIWLTQDTAGNKKL 144
Dd	123 GEIITWLQDTEIKQRV 139
RESULT 10	
US-08-480-604A-26	
; Sequence 26, Application US/08480604A	
; Patent No. 5736139	
; GENERAL INFORMATION:	
; APPLICANT: KINK, JOHN A.	
; APPLICANT: THALLEY, BRUCE S.	
; APPLICANT: PADHYE, NISHA V.	
; APPLICANT: FIRCA, JOSEPH R.	
; APPLICANT: STAFFORD, DOUGLAS C.	
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND	
; PREVENTION OF C. DIFFICILE DISEASE	
; NUMBER OF SEQUENCES: 32	
; CORRESPONDENCE ADDRESS:	
; ADDRESSEE: MEDLEN & CARROLL, LLP	
; STREET: 220 MONTGOMERY STREET, SUITE 2200	
; CITY: SAN FRANCISCO	
; STATE: CALIFORNIA	
; COUNTRY: UNITED STATES OF AMERICA	
; ZIP: 94104	
; COMPUTER READABLE FORM:	
; MEDIUM TYPE: Floppy disk	
; COMPUTER: IBM PC compatible	
; OPERATING SYSTEM: PC-DOS/MS-DOS	
; SOFTWARE: Patent In Release #1.0, Version #1.30	
; CURRENT APPLICATION DATA:	
; APPLICATION NUMBER: US/08/480,604A	
; FILING DATE: 07-JUN-1995	
; CLASSIFICATION: 424	
; PRIOR APPLICATION DATA:	
; APPLICATION NUMBER: US 08/422,711	
; FILING DATE: 14-APR-1995	
; PRIOR APPLICATION DATA:	
; APPLICATION NUMBER: US 08/405,496	
; FILING DATE: 16-MAR-1995	
; PRIOR APPLICATION DATA:	
; APPLICATION NUMBER: US 08/329,154	
; FILING DATE: 25-OCT-1994	
; PRIOR APPLICATION DATA:	
; APPLICATION NUMBER: US 08/161,907	
; FILING DATE: 02-DEC-1993	
; PRIOR APPLICATION DATA:	
; APPLICATION NUMBER: US 07/985,321	
; FILING DATE: 04-DEC-1992	
; PRIOR APPLICATION DATA:	
; APPLICATION NUMBER: US 07/429,791	
; FILING DATE: 31-OCT-1989	
; ATTORNEY/AGENT INFORMATION:	
; NAME: INGOLIA, DIANE E.	
; REGISTRATION NUMBER: 40,027	
; REFERENCE/DOCKET NUMBER: OPDH-01763	
; TELEPHONE: (415) 705-8410	
; TELEFAX: (415) 397-8338	
; INFORMATION FOR SEQ ID NO: 26:	
; SEQUENCE CHARACTERISTICS:	
; LENGTH: 462 amino acids	
; TYPE: amino acid	
; TOPOLOGY: linear	
; MOLECULE TYPE: protein	
; US-08-480-604A-26	
Query Match 48.2%; Score 371.5; DB 1; Length 462;	
Best Local Similarity 49.6%; Pred. No. 8.2e-31;	
Matches 68; Conservative 28; Mismatches 40; Indels 1; Gaps 1;	
Qy	8 LILYFNKLYKKIKDSILDMRYENKNFKTIDISYGSNISINGDVYIYTNRNQFGIYSKP 67
Dd	123 GEIITWLQDTEIKQRV 139
RESULT 11	
US-08-405-496A-26	
; Sequence 26, Application US/08405496A	
; Patent No. 5919665	
; GENERAL INFORMATION:	
; APPLICANT: WILLIAMS, JAMES A.	
; TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM	
; PREVENTION OF NEUROTOXIN	
; NUMBER OF SEQUENCES: 30	
; CORRESPONDENCE ADDRESS:	
; ADDRESSEE: MEDLEN & CARROLL, LLP	
; STREET: 220 MONTGOMERY STREET, SUITE 2200	
; CITY: SAN FRANCISCO	
; STATE: CALIFORNIA	
; COUNTRY: USA	
; ZIP: 94104	
; COMPUTER READABLE FORM:	
; MEDIUM TYPE: Floppy disk	
; COMPUTER: IBM PC compatible	
; OPERATING SYSTEM: PC-DOS/MS-DOS	
; SOFTWARE: Patent In Release #1.0, Version #1.30	
; CURRENT APPLICATION DATA:	
; APPLICATION NUMBER: US/08/405,496A	
; FILING DATE: 16-MAR-1995	
; CLASSIFICATION: 424	
; PRIOR APPLICATION DATA:	
; APPLICATION NUMBER: US 08/329,154	
; FILING DATE: 25-OCT-1994	
; PRIOR APPLICATION DATA:	
; APPLICATION NUMBER: US 08/161,907	
; FILING DATE: 02-DEC-1993	
; PRIOR APPLICATION DATA:	
; APPLICATION NUMBER: US 07/985,321	
; FILING DATE: 04-DEC-1992	
; PRIOR APPLICATION DATA:	
; APPLICATION NUMBER: US 07/429,791	
; FILING DATE: 31-OCT-1989	
; ATTORNEY/AGENT INFORMATION:	
; NAME: INGOLIA, DIANE E.	
; REGISTRATION NUMBER: 40,027	
; REFERENCE/DOCKET NUMBER: OPDH-01308	
; TELEPHONE: (415) 705-8410	
; TELEFAX: (415) 397-8338	
; INFORMATION FOR SEQ ID NO: 26:	
; SEQUENCE CHARACTERISTICS:	
; LENGTH: 462 amino acids	
; TYPE: amino acid	
; TOPOLOGY: linear	
; MOLECULE TYPE: protein	
; US-08-405-496A-26	
Query Match 48.2%; Score 371.5; DB 1; Length 462;	
Best Local Similarity 49.6%; Pred. No. 8.2e-31;	
Matches 68; Conservative 28; Mismatches 40; Indels 1; Gaps 1;	
Qy	8 LILYFNKLYKKIKDSILDMRYENKNFKTIDISYGSNISINGDVYIYTNRNQFGIYSKP 67
Dd	123 GEIITWLQDTEIKQRV 139
RESULT 12	
US-08-405-496A-26	
; Sequence 26, Application US/08405496A	
; Patent No. 5919665	
; GENERAL INFORMATION:	
; APPLICANT: WILLIAMS, JAMES A.	
; TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM	
; PREVENTION OF NEUROTOXIN	
; NUMBER OF SEQUENCES: 30	
; CORRESPONDENCE ADDRESS:	
; ADDRESSEE: MEDLEN & CARROLL, LLP	
; STREET: 220 MONTGOMERY STREET, SUITE 2200	
; CITY: SAN FRANCISCO	
; STATE: CALIFORNIA	
; COUNTRY: USA	
; ZIP: 94104	
; COMPUTER READABLE FORM:	
; MEDIUM TYPE: Floppy disk	
; COMPUTER: IBM PC compatible	
; OPERATING SYSTEM: PC-DOS/MS-DOS	
; SOFTWARE: Patent In Release #1.0, Version #1.30	
; CURRENT APPLICATION DATA:	
; APPLICATION NUMBER: US/08/405,496A	
; FILING DATE: 16-MAR-1995	
; CLASSIFICATION: 424	
; PRIOR APPLICATION DATA:	
; APPLICATION NUMBER: US 08/329,154	
; FILING DATE: 25-OCT-1994	
; PRIOR APPLICATION DATA:	
; APPLICATION NUMBER: US 08/161,907	
; FILING DATE: 02-DEC-1993	
; PRIOR APPLICATION DATA:	
; APPLICATION NUMBER: US 07/985,321	
; FILING DATE: 04-DEC-1992	
; PRIOR APPLICATION DATA:	
; APPLICATION NUMBER: US 07/429,791	
; FILING DATE: 31-OCT-1989	
; ATTORNEY/AGENT INFORMATION:	
; NAME: INGOLIA, DIANE E.	
; REGISTRATION NUMBER: 40,027	
; REFERENCE/	

Db 88 SKIEVILKNAIVNSMYENFSTFWIRPKYFNSISLNEYTIINCM-ENNSGKWSLNY 146
Qy 128 NKIIWTLODTAGNOKL 144
Db 147 GEIIWTLODTQEIQRV 163
RESULT 12
US-08-915-136-26
; Sequence 26, Application US/08915136
; Patent No. 6290960
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; FILING DATE: US/08/915,136
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/480,604
; FILING DATE:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01763
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 26:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 462 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-08-915-136-26

Query Match 48.2%; Score 371.5; DB 2; Length 462;
Best Local Similarity 49.6%; Pred. No. 8.2e-31;
Matches 68; Conservative 28; Mismatches 40; Indels 1; Gaps 1;

Qy 8 LILYFNKLYKKIKDMSILDMRYENKFPIDISGYSGNISINDGVYIYSTNRNQFIYSKPK 67
Db 28 LLSTFTTEYIKNIINTSILNLRYESNHLIDLRYASKINIGSKVNFDPIDKNQIQLFNLES 87
Qy 68 SEVNIQONNDIIVNGRYQNESISFWIRPKYFNKVNLANNEYTIIDCIRNNNSGKWSLNY 127
Db 88 SKIEVILKNAIVNSMYENFSTFWIRPKYFNSISLNEYTIINCM-ENNSGKWSLNY 146
Qy 128 NKIIWTLODTAGNOKL 144
Db 147 GEIIWTLODTQEIQRV 163
RESULT 13
US-09-084-517-26
; Sequence 26, Application US/09084517
; Patent No. 6613329
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; FILING DATE: US/09/084,517
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: CARROLL, PETER G.
; REGISTRATION NUMBER: 32,837
; REFERENCE/DOCKET NUMBER: OPHD-01610
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 26:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 462 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
US-09-084-517-26

Query Match 48.2%; Score 371.5; DB 2; Length 462;
Best Local Similarity 49.6%; Pred. No. 8.2e-31;
Matches 68; Conservative 28; Mismatches 40; Indels 1; Gaps 1;

Qy	8	LILYFNKLYKKT	KONKSILDMRYENKNKFD	ISGYSGNISNGDVYIYSTNRNQGIYSSRP	67
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Db	28	LSTFTFYKNIINT	SILNLAYESNHLIDLSRYASKINIGSKYVDFPIDKNQIQLEPNLES	87	
		:	:	:	:
Qy	68	SEVNTAQNNDI	IYNGRYQNFISFWIRIPKYNKVLNNEYTTIDCIRNNNSGWSKISLNY	127	
		:	:	:	:
Db	88	SKIEVLKNAI	VYNSMYENFSTFWIRIPKYNFISLNEYTTINCM-ENNSCWKYSLNY	146	
		:	:	:	:
Qy	128	NKIWTLODTAGNOKL	144		
		:	:		
Db	147	GEIWTLODTEIKORV	163		
		:	:		

RESULT 14
 US-09-255-829-20
 ; Sequence 20, Application US/09255829
 ; Patent No. 6461617
 ; GENERAL INFORMATION:
 ; APPLICANT: Shone, Clifford Charles
 ; APPLICANT: Quinn, Conrad Padraig
 ; APPLICANT: Foster, Keith Alan
 ; TITLE OF INVENTION: Recombinant Toxin Fragments
 ; NUMBER OF SEQUENCES: 29
 ; CORRESPONDENCE ADDRESS:
 ; ADDRESSEE: STERNE, KESSLER, GOLDSTEIN, & FOX P.L.L.C.
 ; STREET: 1100 NEW YORK AVENUE, NW, SUITE 600
 ; CITY: WASHINGTON
 ; STATE: DC
 ; COUNTRY: USA
 ; ZIP: 20005-3934

Query Match	46.1%;	Score 355;	DB 2;	Length 1169;
Best Local Similarity	47.3%;	Pred. No. 1.5e-28;		
Matches	69;	Conservative 33;	Mismatches 38;	Indels 6; Gaps 3;
Qy	2	YTNDKLILFVFKLYKKIKNSILDMRYENNKKFIDISGYGNSISINGDVVIYSTNRNQFG	61	
Db	843	YTTNDTILIEFVKYNSILNAILNRLRYKONNLDLSYGAKVEYDGVSL--NDRKNQFK	900	
Qy	62	IYSSKSPSEVNAIQNNDIILYNGRYQNFSGISFWVRIPKPFN--KVLNANETIIDICIRNNN	118	
Db	901	LTSGANSKIRVTQNQILFISVDFDSFWIRIPKNDGIONYIHNETIINCIMK--NN	959	
Qy	119	SGWKISLNYNKKIIWTLQDTAGNNOKL	144	

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|||||: |:||||| |: : :
Db      960 SGWKISIRGNRIIWTLLIDINGKTKSV 985

RESULT 15
US-10-360-101-220
; Sequence 220, Application US/10360101
; Patent No. 6861236
; GENERAL INFORMATION:
; APPLICANT: Moll, Gert N.
; APPLICANT: Leenhouts, Cornelis J.
; TITLE OF INVENTION: Export and modification of (poly)peptide in the lantibiotic way
; FILE REFERENCE: 2183-5673
; CURRENT APPLICATION NUMBER: US/10/360,101
; CURRENT FILING DATE: 2003-02-07
; PRIOR APPLICATION NUMBER: EP 02077060.8
; PRIOR FILING DATE: 2002-05-24
; NUMBER OF SEQ ID NOS: 309
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 220
; LENGTH: 1290
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: sequence of clostridium botulinum toxin type B
US-10-360-101-220

Query Match      46.1%; Score 355; DB 2; Length 1290;
Best Local Similarity 47.3%; Pred. No. 1.7e-28;
Matches 69; Conservative 33; Mismatches 38; Indels 6; Gaps 3;

Qy      2 YTNDKILILYFNKLYKKIKONSLDMRYENKNKFDISGYGNSINISGDVYIYSTNRNQFG 61
Db      842 YTNDTILIEFNKYNSEILNIIILNRYKNNLIDLSGYGAKVEYDGVEL--NDKNQFK 999

Qy      62 IYSSKPEVNIAQNNDIIYNGRYQNFISFWVRIPKYN---KVNLNNEYTIIDCIRNNN 118
Db      900 LTSANSKIRVTQNTQIFNSVFLDFSVFWIRPKYKNDGIQNYIHNEYTIINCWK--NN 958

Qy      119 SGWKISLNNYKIIWTLQDTAGNOKL 144
Db      959 SGWKISIRGNRIIWTLLIDINGKTKSV 984

Search completed: March 2, 2006, 00:49:33
Job time : 18.7077 secs

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GenCore version 5.1.7
Copyright (c) 1993 - 2006 Bioceleration Ltd.

OM protein - protein search, using sw model

Run on: March 2, 2006, 01:11:03 ; Search time 57.2993 Seconds
(without alignments)
1050.055 Million cell updates/sec

Title: US-08-981-087B-2
Perfect score: 770
Sequence: 1 SYTNKILILVFNKLYKKIK.....LNYNKIIWTLDQTAGNNQKL 144

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 1867569 seqs, 417829326 residues

Total number of hits satisfying chosen parameters: 1867569

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Published Applications AA Main:
1: /cgn2_6/ptodata/1/pubpaa/US07_PUBCOMB.pep.*
2: /cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep.*
3: /cgn2_6/ptodata/1/pubpaa/US09_PUBCOMB.pep.*
4: /cgn2_6/ptodata/1/pubpaa/US10A_PUBCOMB.pep.*
5: /cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep.*
6: /cgn2_6/ptodata/1/pubpaa/US11_PUBCOMB.pep.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	770	100.0	144	2	US-08-981-087A-2
2	770	100.0	366	4	US-10-452-024-173
3	770	100.0	431	2	US-08-981-087A-1
4	770	100.0	432	3	US-09-910-186A-16
5	770	100.0	432	3	US-09-910-186A-34
6	770	100.0	432	4	US-10-452-024-178
7	770	100.0	645	4	US-10-478-516-5
8	770	100.0	645	4	US-10-478-516-5
9	770	100.0	657	4	US-10-478-516-6
10	770	100.0	657	4	US-10-478-516-7
11	770	100.0	660	4	US-10-130-973A-12
12	770	100.0	685	4	US-10-130-973A-7
13	770	100.0	862	4	US-10-130-973A-4
14	770	100.0	887	4	US-10-130-973A-6
15	770	100.0	979	4	US-10-478-516-26
16	770	100.0	1032	4	US-10-130-973A-15
17	770	100.0	1092	4	US-10-130-973A-14
18	770	100.0	1192	4	US-10-478-516-23
19	770	100.0	1192	4	US-10-478-516-24
20	770	100.0	1278	4	US-10-452-024-152
21	770	100.0	1278	4	US-10-205-516-12
22	770	100.0	1288	4	US-10-205-516-26
23	626.5	81.4	369	4	US-10-452-024-174
24	626.5	81.4	1274	4	US-10-354-774-71
25	626.5	81.4	1274	4	US-10-271-012-71
26	626.5	81.4	1274	4	US-10-452-024-6
27	626.5	81.4	1274	4	US-10-729-122-71

Sequence 71, Appl
Sequence 71, Appl
Sequence 71, Appl
Sequence 71, Appl
Sequence 71, Appl
Sequence 162, App
Sequence 156, App
Sequence 73, Appl
Sequence 73, Appl
Sequence 73, Appl
Sequence 73, Appl
Sequence 73, Appl
Sequence 73, Appl
Sequence 14, Appl
Sequence 56, Appl
Sequence 56, Appl

ALIGNMENTS

RESULT 1
US-08-981-087A-2
; Sequence 2, Application US/08981087A
; Publication No. US20020081304A1
; GENERAL INFORMATION:
; APPLICANT: Elmore, Michael J.
; APPLICANT: Mauchline, Margaret L.
; APPLICANT: Minton, Nigel P.
; APPLICANT: Passchnik, Vladimir A.
; APPLICANT: Titball, Richard W.
; TITLE OF INVENTION: TYPE F BOTULINUM TOXIN AND USE THEREOF
; NUMBER OF SEQUENCES: 6
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: NIXON & VANDERHYE P.C.
; STREET: 1100 No. US20020081304A1th Glebe Rd. 8th floor
; CITY: Arlington
; STATE: VA
; COUNTRY: USA
; ZIP: 22201-4741
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/981.087A
; FILING DATE: 27-MAY-1998
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: PCT/GB96/01409
; FILING DATE: 12-JUN-1996
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: GB 9511909.5
; FILING DATE: 12-JUN-1995
; ATTORNEY/AGENT INFORMATION:
; NAME: Crawford, Arthur R.
; REGISTRATION NUMBER: 25,327
; REFERENCE/DOCKET NUMBER: 124-688
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 703-816-4000
; TELEFAX: 703-816-4100
; INFORMATION FOR SEQ ID NO: 2:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 144 amino acids
; TYPE: amino acid
; STRANDEDNESS:
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
US-08-981-087A-2

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Query Match      100.0%; Score 770; DB 2; Length 144;
Best Local Similarity 100.0%; Pred. No. 1.2e-64;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
Db 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60

Qy 61 GIYSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNSG 120
Db 61 GIYSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNSG 120

Qy 121 WKISLNYNKIITWLTQDTAGNNQKL 144
Db 121 WKISLNYNKIITWLTQDTAGNNQKL 144

RESULT 2
US-10-452-024-173
; Sequence 173, Application US/10452024
; Publication No. US20040013687A1
; GENERAL INFORMATION:
; APPLICANT: Simpson, Lance
; APPLICANT: Park, Jung-Beak
; APPLICANT: Maksymowich, Andrew
; TITLE OF INVENTION: Compositions and Methods For Transsepithelial Molecular Transport
; FILE REFERENCE: 9855-96U1
; CURRENT APPLICATION NUMBER: US/10/452.024
; CURRENT FILING DATE: 2003-06-02
; PRIOR APPLICATION NUMBER: 60/384,949
; PRIOR FILING DATE: 2002-05-31
; NUMBER OF SEQ ID NOS: 188
; SOFTWARE: PatentIn version 3.2
; SEQ ID NO 173
; LENGTH: 366
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-10-452-024-173

Query Match      100.0%; Score 770; DB 4; Length 366;
Best Local Similarity 100.0%; Pred. No. 3.5e-64;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
Db 214 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 273

Qy 61 GIYSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNSG 120
Db 274 GIYSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNSG 333

Qy 121 WKISLNYNKIITWLTQDTAGNNQKL 144
Db 334 WKISLNYNKIITWLTQDTAGNNQKL 357

RESULT 3
US-08-981-087A-1
; Sequence 1, Application US/08981087A
; Publication No. US20020081304A1
; GENERAL INFORMATION:
; APPLICANT: Elmore, Michael J.
; APPLICANT: Mauchline, Margaret L.
; APPLICANT: Minton, Nigel P.
; APPLICANT: Pasechnik, Vladimir A.
; APPLICANT: Titball, Richard W.
; TITLE OF INVENTION: TYPE F BOTULINUM TOXIN AND USE THEREOF
; NUMBER OF SEQUENCES: 6
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: NIXON & VANDERHYE P.C.
; STREET: 1100 No. US20020081304A1ch Glebe Rd. 8th floor
; CITY: Arlington
; STATE: VA
```

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; COUNTRY: USA
; ZIP: 22201-4741
; COMPUTER READABLE FORM: disk
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/981,087A
; FILING DATE: 27-MAY-1998
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: PCT/GB96/01409
; FILING DATE: 12-JUN-1996
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: GB 9511909.5
; FILING DATE: 12-JUN-1995
; ATTORNEY/AGENT INFORMATION:
; NAME: Crawford, Arthur R.
; REGISTRATION NUMBER: 25,327
; REFERENCE/DOCKET NUMBER: 124-688
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 703-816-4000
; TELEFAX: 703-816-4100
; INFORMATION FOR SEQ ID NO: 1:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 431 amino acids
; TYPE: amino acid
; STRANDEDNESS:
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
US-08-981-087A-1

Query Match      100.0%; Score 770; DB 2; Length 431;
Best Local Similarity 100.0%; Pred. No. 4.3e-64;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60
Db 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFDISGYGNSISINGDVYIYSTNRNQF 60

Qy 61 GIYSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNSG 120
Db 61 GIYSKSEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVLNNEYTIIDCIRNNSG 120

Qy 121 WKISLNYNKIITWLTQDTAGNNQKL 144
Db 121 WKISLNYNKIITWLTQDTAGNNQKL 144

RESULT 4
US-09-910-186A-16
; Sequence 16, Application US/09910186A
; Publication No. US20030009025A1
; GENERAL INFORMATION:
; APPLICANT: U.S. Army Medical Research & Materiel Command
; TITLE OF INVENTION: RECOMBINANT VACCINE AGAINST BOTULINUM
; FILE REFERENCE: A33626-A 067252.0107
; CURRENT APPLICATION NUMBER: US/09/910,186A
; CURRENT FILING DATE: 2001-07-20
; PRIOR APPLICATION NUMBER: PCT/US00/12890
; PRIOR FILING DATE: 2000-05-12
; PRIOR APPLICATION NUMBER: 09/611,419
; PRIOR FILING DATE: 2000-07-06
; PRIOR APPLICATION NUMBER: 60/133,865
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,866
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,867
; PRIOR FILING DATE: 1999-05-12
; PRIOR APPLICATION NUMBER: 60/133,868
; PRIOR FILING DATE: 1999-05-12
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; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 8
; LENGTH: 645
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic
US-130-973A-8

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Query Match	100.0%	Score 770;	DB 4;	Length 645;
Best Local Similarity	100.0%;	Pred. No. 6.9e-64;		
Matches 144;	Conservative 0;	Mismatches 0;	Indels 0;	Gaps 0;
QY	1	SYTDKILILYFNKLYKKIKDNSLDMRYENNFIDISGYGNSISINGDVYIYSTNRNQF	60	
Db	215	SYTDKILILYFNKLYKKIKDNSLDMRYENNFIDISGYGNSISINGDVYIYSTNRNQF	274	
QY	61	GIYSPKPEVNIAQNNDIIYNGRYONFSISFWVRIPKYFNKVLNANNEYTIDICIRNNNSG	120	
Db	275	GIYSPKPEVNIAQNNDIIYNGRYONFSISFWVRIPKYFNKVLNANNEYTIDICIRNNNSG	334	
QY	121	WKISLNYKKIIWTLTQDTAGNNQKL	144	
Db	335	WKISLNYKKIIWTLTQDTAGNNQKL	358	

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RESULT 8
US-10-478-516-5
; Sequence 5, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; APPLICANT: Shone, Clifford C.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; CURRENT FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 5
; LENGTH: 645
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: diphtheria toxin translocation domain with BoNT/P-F-HC
US-10-478-516-5

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RESULT 9
US-10-478-516-6
; Sequence 6, Application US/10478516
; Publication No. US2004020889A1

```

: GENERAL INFORMATION:
: APPLICANT: Sutton, John M.
: APPLICANT: Sutton, Clifford C.
: TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
: FILE REFERENCE: 1591.1000000
: CURRENT APPLICATION NUMBER: US/10/478,516
: CURRENT FILING DATE: 2003-11-24
: PRIOR APPLICATION NUMBER: PCT/GB02/02384
: PRIOR FILING DATE: 2002-05-21
: PRIOR APPLICATION NUMBER: GB 0112687.9
: PRIOR FILING DATE: 2001-05-24
: NUMBER OF SEQ ID NOS: 32
: SOFTWARE: Patentin version 3.1
: SEQ ID NO 6
: LENGTH: 657
: TYPE: PRT
: ORGANISM: Artificial sequence
: FEATURE:
: OTHER INFORMATION: thrombin linker, diphteria toxin translocation domain, B
US-10-478-516-6

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RESULT 10
US-10-478-516-7
; Sequence 7, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; APPLICANT: Shone, Clifford C.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; CURRENT FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 7
; LENGTH: 657
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: factor Xa linker, diphtheria toxin translocation domain, B
US-10-478-516-7

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	Query Match	100.0%;	Score 770;	DB 4;	Length 657;
	Best Local Similarity	100.0%;	Pred. No. 7e-64;		
	Matches 144;	Conservative 0;	Mismatches 0;	Indels 0;	Gaps 0;
QY	1	SYTNDKILLIYFNKLYKKIKDMSILDMRYENKNKFDISYGSNISINGDVVIYSTNRNQF	60		
Db	227	SYTNDKILLIYFNKLYKKIKDMSILDMRYENKNKFDISYGSNISINGDVVIYSTNRNQF	286		
QY	61	GIYSKSESEVNIQNDNIYNGYQNFISFVWVRIPKYFNKVNLNNEYTIIDICIRNNNSG	120		

Db 287 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEVYTIIDCIRNNSG 346

Qy 121 WKISLNYNKIIWTLODTAGNNQKL 144

Db 347 WKISLNYNKIIWTLODTAGNNQKL 370

RESULT 11

US-10-130-973A-12

Sequence 12, Application US/10130973A

Publication No. US20030147895A1

GENERAL INFORMATION:

APPLICANT: Shone, Clifford

APPLICANT: Sutton, John

APPLICANT: Silman, Nigel

TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells

FILE REFERENCE: 1581.0920000

CURRENT APPLICATION NUMBER: US/10/130,973A

CURRENT FILING DATE: 2002-10-21

PRIOR FILING DATE: 2000-12-04

PRIOR FILING DATE: 1999-12-02

PRIOR FILING DATE: 2000-04-07

NUMBER OF SEQ ID NOS: 18

SOFTWARE: Patent in version 3.0

SEQ ID NO 12

LENGTH: 660

TYPE: PRT

ORGANISM: Artificial Sequence

FEATURE:

OTHER INFORMATION: synthetic construct

US-10-130-973A-12

Query Match 100.0%; Score 770; DB 4; Length 660;

Best Local Similarity 100.0%; Pred. No. 7.1e-64;

Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 60

Db 215 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 274

Qy 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEVYTIIDCIRNNSG 120

Db 275 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEVYTIIDCIRNNSG 334

Qy 121 WKISLNYNKIIWTLODTAGNNQKL 144

Db 335 WKISLNYNKIIWTLODTAGNNQKL 358

RESULT 12

US-10-130-973A-7

Sequence 7, Application US/10130973A

Publication No. US20030147895A1

GENERAL INFORMATION:

APPLICANT: Shone, Clifford

APPLICANT: Sutton, John

APPLICANT: Silman, Nigel

TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells

FILE REFERENCE: 1581.0920000

CURRENT APPLICATION NUMBER: US/10/130,973A

CURRENT FILING DATE: 2002-10-21

PRIOR FILING DATE: 2000-12-04

PRIOR FILING DATE: 1999-12-02

PRIOR FILING DATE: 2000-04-07

NUMBER OF SEQ ID NOS: 18

SOFTWARE: Patent in version 3.0

SEQ ID NO 7

LENGTH: 660

TYPE: PRT

ORGANISM: Artificial Sequence

FEATURE:

OTHER INFORMATION: synthetic construct

US-10-130-973A-7

Query Match 100.0%; Score 770; DB 4; Length 660;

Best Local Similarity 100.0%; Pred. No. 7.1e-64;

Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 60

Db 215 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 274

Qy 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEVYTIIDCIRNNSG 120

Db 275 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEVYTIIDCIRNNSG 334

Qy 121 WKISLNYNKIIWTLODTAGNNQKL 144

Db 335 WKISLNYNKIIWTLODTAGNNQKL 358

LENGTH: 685

TYPE: PRT

ORGANISM: Artificial Sequence

FEATURE:

OTHER INFORMATION: synthetic construct

US-10-130-973A-7

Query Match 100.0%; Score 770; DB 4; Length 685;

Best Local Similarity 100.0%; Pred. No. 7.4e-64;

Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 60

Db 255 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 314

Qy 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEVYTIIDCIRNNSG 120

Db 315 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEVYTIIDCIRNNSG 374

Qy 121 WKISLNYNKIIWTLODTAGNNQKL 144

Db 375 WKISLNYNKIIWTLODTAGNNQKL 398

RESULT 13

US-10-130-973A-4

Sequence 4, Application US/10130973A

Publication No. US20030147895A1

GENERAL INFORMATION:

APPLICANT: Shone, Clifford

APPLICANT: Sutton, John

APPLICANT: Silman, Nigel

TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells

FILE REFERENCE: 1581.0920000

CURRENT APPLICATION NUMBER: US/10/130,973A

CURRENT FILING DATE: 2002-10-21

PRIOR FILING DATE: 2000-12-04

PRIOR FILING DATE: 1999-12-02

PRIOR FILING DATE: 2000-04-07

NUMBER OF SEQ ID NOS: 18

SOFTWARE: Patent in version 3.0

SEQ ID NO 4

LENGTH: 862

TYPE: PRT

ORGANISM: Artificial Sequence

FEATURE:

OTHER INFORMATION: synthetic construct

US-10-130-973A-4

Query Match 100.0%; Score 770; DB 4; Length 862;

Best Local Similarity 100.0%; Pred. No. 9.7e-64;

Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 60

Db 432 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 491

Qy 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEVYTIIDCIRNNSG 120

Db 492 GIYSSKPEVNIAQNNDIYNGRYQNFISFWVRIPKYNKVNLNNEVYTIIDCIRNNSG 551

Qy 121 WKISLNYNKIIWTLODTAGNNQKL 144

Db 552 WKISLNYNKIIWTLODTAGNNQKL 575

RESULT 14

US-10-130-973A-6

Sequence 6, Application US/10130973A

Publication No. US20030147895A1

; GENERAL INFORMATION:
 ; APPLICANT: Shone, Clifford
 ; APPLICANT: Sutton, John
 ; APPLICANT: Silman, Nigel
 ; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
 ; FILE REFERENCE: 1581.0920000
 ; CURRENT APPLICATION NUMBER: US/10/130,973A
 ; CURRENT FILING DATE: 2002-10-21
 ; PRIOR APPLICATION NUMBER: PCT/GB00/04644
 ; PRIOR FILING DATE: 2000-12-04
 ; PRIOR APPLICATION NUMBER: GB 928530.6
 ; PRIOR FILING DATE: 1999-12-02
 ; PRIOR APPLICATION NUMBER: GB 008658.7
 ; PRIOR FILING DATE: 2000-04-07
 ; NUMBER OF SEQ ID NOS: 18
 ; SOFTWARE: PatentIn version 3.0
 ; SEQ ID NO 6
 ; LENGTH: 887
 ; TYPE: PRT
 ; ORGANISM: Artificial Sequence
 ; FEATURE:
 ; OTHER INFORMATION: synthetic construct
 US-10-130-973A-6

Query Match 100.0%; Score 770; DB 4; Length 887;
 Best Local Similarity 100.0%; Pred. No. 1e-63;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 60
 DB 457 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 516
 QY 61 GIYSSKPESEVNIAQNNDIYNGRYQNFSISFWVRIPKYPKVNKVLNNEYYTIIDCIRNNNSG 120
 DB 517 GIYSSKPESEVNIAQNNDIYNGRYQNFSISFWVRIPKYPKVNKVLNNEYYTIIDCIRNNNSG 576
 QY 121 WKISLNYNKIIWTLODTAGNNQKL 144
 DB 577 WKISLNYNKIIWTLODTAGNNQKL 600

RESULT 15
 US-10-478-516-26
 ; Sequence 26, Application US/10478516
 ; Publication No. US2004020889A1
 ; GENERAL INFORMATION:
 ; APPLICANT: Shone, Clifford C.
 ; APPLICANT: Sutton, John M.
 ; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
 ; FILE REFERENCE: 1581.1000000
 ; CURRENT APPLICATION NUMBER: US/10/478,516
 ; CURRENT FILING DATE: 2003-11-24
 ; PRIOR APPLICATION NUMBER: PCT/GB02/02384
 ; PRIOR FILING DATE: 2002-05-21
 ; PRIOR APPLICATION NUMBER: GB 0112687.9
 ; PRIOR FILING DATE: 2001-05-24
 ; NUMBER OF SEQ ID NOS: 32
 ; SOFTWARE: PatentIn version 3.1
 ; SEQ ID NO 26
 ; LENGTH: 979
 ; TYPE: PRT
 ; ORGANISM: Artificial sequence
 ; FEATURE:
 ; OTHER INFORMATION: Protein sequence for YopT, factor Xa linker, diphtheria toxin
 ; OTHER INFORMATION: translocation
 ; OTHER INFORMATION: domain, with Bont/F-HC
 US-10-478-516-26

Query Match 100.0%; Score 770; DB 4; Length 979;
 Best Local Similarity 100.0%; Pred. No. 1.1e-63;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 60

Db 549 SYTNDKILILYFNKLYKKIKDNSILDMRYENKFKIDISGYGSNISINGDVYIYSTNRNQF 608
 QY 61 GIYSSKPESEVNIAQNNDIYNGRYQNFSISFWVRIPKYPKVNKVLNNEYYTIIDCIRNNNSG 120
 Db 609 GIYSSKPESEVNIAQNNDIYNGRYQNFSISFWVRIPKYPKVNKVLNNEYYTIIDCIRNNNSG 668
 QY 121 WKISLNYNKIIWTLODTAGNNQKL 144
 Db 669 WKISLNYNKIIWTLODTAGNNQKL 692

Search completed: March 2, 2006, 01:17:47
 Job time : 57.2993 secs

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OM protein - protein search, using sw model

Run on: March 2, 2006, 01:12:18 ; Search time 5.84687 Seconds
(without alignments)
491.279 Million cell updates/sec

Title: US-08-981-087B-2

Perfect score: 770

Sequence: 1 SYTNDKILLYFNKLYKKIK.....LNVNKIIWTLODTAGNNQKL 144

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 133702 seqs, 19947517 residues

Total number of hits satisfying chosen parameters: 133702

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : Published Applications AA New:*

- 1: /cgn2_6/ptodata/1/pubpaa/US08_NEW_PUB.pep.*
- 2: /cgn2_6/ptodata/1/pubpaa/US06_NEW_PUB.pep.*
- 3: /cgn2_6/ptodata/1/pubpaa/US07_NEW_PUB.pep.*
- 4: /cgn2_6/ptodata/1/pubpaa/US09_NEW_PUB.pep.*
- 5: /cgn2_6/ptodata/1/pubpaa/US09_NEW_PUB.pep.*
- 6: /cgn2_6/ptodata/1/pubpaa/US10_NEW_PUB.pep.*
- 7: /cgn2_6/ptodata/1/pubpaa/US11_NEW_PUB.pep.*
- 8: /cgn2_6/ptodata/1/pubpaa/US60_NEW_PUB.pep.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	770	100.0	1059	7 US/11/062	Sequence 5, Appli
2	770	100.0	1084	7 US/11/062	Sequence 8, Appli
3	626.5	81.4	838	6 US-10-909-769-28	Sequence 28, Appl
4	571.5	74.2	829	6 US-10-909-769-26	Sequence 26, Appl
5	378.5	49.2	849	6 US-10-909-769-18	Sequence 18, Appl
6	378.5	49.2	1067	7 US/11/062	Sequence 3, Appli
7	378.5	49.2	1092	7 US/11/062	Sequence 6, Appli
8	355	46.1	1070	7 US/11/062	Sequence 4, Appli
9	355	46.1	1095	7 US/11/062	Sequence 7, Appli
10	355	46.1	1169	7 US-11-077-550-20	Sequence 20, Appl
11	348	45.2	900	6 US-10-909-769-20	Sequence 20, Appl
12	319	41.4	855	6 US-10-909-769-30	Sequence 30, Appl
13	250	32.5	842	6 US-10-909-769-22	Sequence 22, Appl
14	249.5	32.4	834	6 US-10-909-769-24	Sequence 24, Appl
15	206	26.8	1315	7 US-11-077-550-141	Sequence 141, App
16	85	11.0	3194	7 US-11-052-554A-90	Sequence 90, Appl
17	81	10.5	347	7 US-11-098-686-10240	Sequence 10240, A
18	77.5	10.1	751	7 US-11-052-554A-109	Sequence 109, App
19	76.5	9.9	443	7 US-11-036-532A-131	Sequence 131, App
20	76.5	9.9	1332	7 US-11-091-643-18	Sequence 18, Appl
21	76.5	9.9	1340	7 US-11-070-575-6	Sequence 6, Appli
22	75.5	9.8	357	7 US-11-087-099-3020	Sequence 3020, Ap
23	75.5	9.8	923	7 US-11-057-058-66	Sequence 66, Appl
24	75.5	9.8	1344	7 US-11-091-643-20	Sequence 20, Appl
25	75	9.7	182	6 US-10-793-626-2414	Sequence 2414, Ap

ALIGNMENTS

RESULT 1

US/11/062
; Sequence 5, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062.471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: Patent In Ver. 2.1
; SEQ ID NO 5
; LENGTH: 1059
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
US/11/062,471A-5

Query Match 100.0%; Score 770; DB 7; Length 1059;

Best Local Similarity 100.0%; Pred. No. 3.1e-63;

Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY	1	SYTNDKILLYFNKLYKKIKKNSILDMRYENKFKIDISGYGNSISNGDVYIYSTNRNQF	60
DB	629	SYTNDKILLYFNKLYKKIKKNSILDMRYENKFKIDISGYGNSISNGDVYIYSTNRNQF	688
QY	61	GYSSKPSSEVNAQNDIIYNGRYQNFISFWRIKPKYFNKVLNNEVTIIDICIRNNNSG	120
DB	689	GYSSKPSSEVNAQNDIIYNGRYQNFISFWRIKPKYFNKVLNNEVTIIDICIRNNNSG	748
QY	121	WKISLNYNKIIWTLODTAGNNQKL	144
DB	749	WKISLNYNKIIWTLODTAGNNQKL	772

RESULT 2

US/11/062

Sequence 70, Appli
Sequence 46, Appli
Sequence 91, Appli
Sequence 4084, Ap
Sequence 164, App
Sequence 339, App
Sequence 10263, A
Sequence 4, Appli
Sequence 115, App
Sequence 215, App
Sequence 2968, Ap
Sequence 25, Appli
Sequence 124, App
Sequence 136, App
Sequence 136, App
Sequence 140, App
Sequence 138, App
Sequence 142, App
Sequence 134, App
Sequence 130, App

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; Sequence 8, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062.471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 8
; LENGTH: 1084
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
US/11/062.471A-8

Query Match 100.0%; Score 770; DB 7; Length 1084;
Best Local Similarity 100.0%; Pred. No. 3.2e-63;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKKEFIDISGYGNSISINGDVYIYSTNRNQF 60
Db 654 SYTNDKILILYFNKLYKKIKDINSILDMRYENKKEFIDISGYGNSISINGDVYIYSTNRNQF 713

Qy 61 GYSSKPEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 120
Db 714 GYSSKPEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 773

Qy 121 WKISLNYNKKIITWLTQDTAGNNQKL 144
Db 774 WKISLNYNKKIITWLTQDTAGNNQKL 797

RESULT 3
US-10-909-769-28
; Sequence 28, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 28
; LENGTH: 838
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-28

Query Match 81.4%; Score 626.5; DB 6; Length 838;
Best Local Similarity 80.3%; Pred. No. 3.8e-50;
Matches 118; Conservative 14; Mismatches 12; Indels 3; Gaps 1;

Qy 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKKEFIDISGYGNSISINGDVYIYSTNRNQF 60

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Db 411 SYTNDKILILYFNKLYKKIKDINSILDMRYENKKEFIDISGYGNSISINGDVYIYSTNRNQF 470
Qy 61 GYSSKPEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNSG 120
Db 471 GIYNSRLSEVNIAQNNDIYNSRYQNFPSISFWVRIPKYPKPMHNHREYTIINCVMGNNNSG 530
Qy 121 WKISLNYNKKIITWLTQDTAGNNQKL 144
Db 531 WKISLRTVRDCEIITWLTQDTSGNKEL 557

RESULT 4
US-10-909-769-26
; Sequence 26, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 26
; LENGTH: 829
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-26

Query Match 74.2%; Score 571.5; DB 6; Length 829;
Best Local Similarity 71.7%; Pred. No. 4.2e-45;
Matches 104; Conservative 25; Mismatches 15; Indels 1; Gaps 1;

Qy 1 SYTNDKILILYFNKLYKKIKDINSILDMRYENKKEFIDISGYGNSISINGDVYIYSTNRNQF 60
Db 406 SYTDDKILISYFNKFFKRIKSSSVLANRYKNDKYVDTSYDYSNININGDVYKYPTNKNQF 465

Qy 61 GYSSKPEVNIAQNNDIYNGRYQNFPSISFWVRIPKYPKFNKVLNNEYTIIDCIRNNNS 119
Db 466 GIYNDKLSSEVNISQNDYIYDNYKYNFISFWVRIPKYPKFNKVLNNEYTIINCVRDNNNS 525

Qy 120 GWKISLNYNKKIITWLTQDTAGNNQKL 144
Db 526 GWKVSLSNHNHIIITWLTQDNAGINQKL 550

RESULT 5
US-10-909-769-18
; Sequence 18, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 18
; LENGTH: 849
; TYPE: PRT
; ORGANISM: Artificial Sequence

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; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-18

Query Match      49.2%; Score 378.5; DB 6; Length 849;
Best Local Similarity 48.3%; Pred. No. 2.4e-27;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;

Qy  2 YTNDKILLFENKLYKKIKNSILDMYENKFKIDISGYSNISNGVDVYIYSTNRNCFG 61
Db  409 YVDNQRLSTFTYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNPDPIDKQIQ 469

Qy  62 IYSSKPEVNIAQNNDIYNGRYONFSIFWVRIPKYNKVNLANNEYTIIDCIRNNNSGW 121
Db  469 LFNLESSKIEVLKNAIVNSMYENFSTFWIRIPKYNFNSISLANNEYTIINCM-ENNSGW 527

Qy  122 KISLNNYKIIWTLODTAGNNQKL 144
Db  528 KVSILNYGEIITWLTQDTQEIQRV 550

RESULT 6
US/11/062
; Sequence 3, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 3
; LENGTH: 1067
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
US/11/062,471A-3

Query Match      49.2%; Score 378.5; DB 7; Length 1067;
Best Local Similarity 48.3%; Pred. No. 3.2e-27;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;

Qy  2 YTNDKILLFENKLYKKIKNSILDMYENKFKIDISGYSNISNGVDVYIYSTNRNCFG 61
Db  627 YVDNQRLSTFTYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNPDPIDKQIQ 686

Qy  62 IYSSKPEVNIAQNNDIYNGRYONFSIFWVRIPKYNKVNLANNEYTIIDCIRNNNSGW 121
Db  687 LFNLESSKIEVLKNAIVNSMYENFSTFWIRIPKYNFNSISLANNEYTIINCM-ENNSGW 745

Qy  122 KISLNNYKIIWTLODTAGNNQKL 144
Db  746 KVSILNYGEIITWLTQDTQEIQRV 768

RESULT 7
US/11/062
; Sequence 6, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles

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```

; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 6
; LENGTH: 1092
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
US/11/062,471A-6

Query Match      49.2%; Score 378.5; DB 7; Length 1092;
Best Local Similarity 48.3%; Pred. No. 3.2e-27;
Matches 69; Conservative 31; Mismatches 42; Indels 1; Gaps 1;

Qy  2 YTNDKILLFENKLYKKIKNSILDMYENKFKIDISGYSNISNGVDVYIYSTNRNCFG 61
Db  652 YVDNQRLSTFTYIKNIINTSILNRYESNHLIDLSRYASKINIGSKVNPDPIDKQIQ 711

Qy  62 IYSSKPEVNIAQNNDIYNGRYONFSIFWVRIPKYNKVNLANNEYTIIDCIRNNNSGW 121
Db  712 LFNLESSKIEVLKNAIVNSMYENFSTFWIRIPKYNFNSISLANNEYTIINCM-ENNSGW 770

Qy  122 KISLNNYKIIWTLODTAGNNQKL 144
Db  771 KVSILNYGEIITWLTQDTQEIQRV 793

RESULT 8
US/11/062
; Sequence 4, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 4
; LENGTH: 1070
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
US/11/062,471A-4

Query Match      46.1%; Score 355; DB 7; Length 1070;
Best Local Similarity 47.3%; Pred. No. 4.6e-25;
Matches 69; Conservative 33; Mismatches 38; Indels 6; Gaps 3;

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QY 2 YTNDKILILYFNKLYKKIKDMSILDYNNKFIIDISGYGNSISINGDVYIYSTNRNQF 61
Db 622 YTNDTILIEFNFKNYSEILNLLRLRYKNNLIDLSGYGAKVEYDGVDEL--NDKNQFK 679
QY 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWIRIPKYPN---KVNLANEYTIIDCIRNN 118
Db 680 LTSSANSKIRVTQNIIFNSVFLDFSVFWIRIPKYNKDGIQNYIHNEYTIINCWK--NN 738
QY 119 SGWKISLVNKKIITWLTQTAGNNQKL 144
Db 739 SGWKISIRGNRIITWLTIDINGTKTSV 764

```

RESULT 9

```

US/11/062
; Sequence 7, Application US/11062471A
; Publication No. US2005025093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassem
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; PRIOR FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 7
; LENGTH: 1095
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
US/11/062,471A-7

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Query Match 46.1%; Score 355; DB 7; Length 1095;
Best Local Similarity 47.3%; Pred. No. 4.7e-25;
Matches 69; Conservative 33; Mismatches 38; Indels 6; Gaps 3;

QY 2 YTNDKILILYFNKLYKKIKDMSILDYNNKFIIDISGYGNSISINGDVYIYSTNRNQF 61
Db 647 YTNDTILIEFNFKNYSEILNLLRLRYKNNLIDLSGYGAKVEYDGVDEL--NDKNQFK 704
QY 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWIRIPKYPN---KVNLANEYTIIDCIRNN 118
Db 705 LTSSANSKIRVTQNIIFNSVFLDFSVFWIRIPKYNKDGIQNYIHNEYTIINCWK--NN 763
QY 119 SGWKISLVNKKIITWLTQTAGNNQKL 144
Db 764 SGWKISIRGNRIITWLTIDINGTKTSV 789

```

RESULT 10

```

US-11-077-550-20
; Sequence 20, Application US/11077550
; Publication No. US2005024435A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford Charles
; APPLICANT: Quinn, Conrad Padraig
; APPLICANT: Foster, Keith Alan
; APPLICANT: Chaddock, John
; APPLICANT: Marks, Philip
; APPLICANT: Sutton, J. Mark
; APPLICANT: Stancombe, Patrick
; APPLICANT: Wayne, Jonathan
; TITLE OF INVENTION: Recombinant Toxin Fragments

```

```

; FILE REFERENCE: 1581.0130004
; CURRENT APPLICATION NUMBER: US/11/077,550
; CURRENT FILING DATE: 2005-03-11
; PRIOR APPLICATION NUMBER: 10/241,596
; PRIOR FILING DATE: 2002-09-12
; PRIOR APPLICATION NUMBER: 09/255,829
; PRIOR FILING DATE: 1999-02-23
; PRIOR APPLICATION NUMBER: PCT/GB97/02273
; PRIOR FILING DATE: 1997-08-22
; PRIOR APPLICATION NUMBER: 08/782,893
; PRIOR FILING DATE: 1996-12-27
; PRIOR APPLICATION NUMBER: GB9625996.5
; PRIOR FILING DATE: 1996-12-13
; PRIOR APPLICATION NUMBER: GB9617671.4
; PRIOR FILING DATE: 1996-08-23
; NUMBER OF SEQ ID NOS: 179
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 20
; LENGTH: 1169
; TYPE: PRT
; ORGANISM: Clostridium botulinum
; OTHER INFORMATION:
US-11-077-550-20

```

```

Query Match 46.1%; Score 355; DB 7; Length 1169;
Best Local Similarity 47.3%; Pred. No. 5.1e-25;
Matches 69; Conservative 33; Mismatches 38; Indels 6; Gaps 3;

QY 2 YTNDKILILYFNKLYKKIKDMSILDYNNKFIIDISGYGNSISINGDVYIYSTNRNQF 61
Db 843 YTNDTILIEFNFKNYSEILNLLRLRYKNNLIDLSGYGAKVEYDGVDEL--NDKNQFK 900
QY 62 IYSSKPEVNIAQNNDIYNGRYQNFISFWIRIPKYPN---KVNLANEYTIIDCIRNN 118
Db 901 LTSSANSKIRVTQNIIFNSVFLDFSVFWIRIPKYNKDGIQNYIHNEYTIINCWK--NN 959
QY 119 SGWKISLVNKKIITWLTQTAGNNQKL 144
Db 960 SGWKISIRGNRIITWLTIDINGTKTSV 985

```

RESULT 11

```

US-10-909-769-20
; Sequence 20, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 20
; LENGTH: 900
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-20

```

```

Query Match 45.2%; Score 348; DB 6; Length 900;
Best Local Similarity 45.6%; Pred. No. 1.7e-24;
Matches 67; Conservative 35; Mismatches 39; Indels 6; Gaps 3;

QY 1 SYTNDKILILYFNKLYKKIKDMSILDYNNKFIIDISGYGNSISINGDVYIYSTNRNQF 60
Db 451 TYSNIEILIKIFNKYNSIILNLLRYKNNLIDLSGYGAKVEYDGVKL--NDKNQFK 508
QY 61 GIYSSKPEVNIAQNNDIYNGRYQNFISFWIRIPKYPN---KVNLANEYTIIDCIRNN 117

```



```

; CURRENT APPLICATION NUMBER: US/11/077,550
; CURRENT FILING DATE: 2005-03-11
; PRIOR APPLICATION NUMBER: 10/241,596
; PRIOR FILING DATE: 2002-09-12
; PRIOR APPLICATION NUMBER: 09/255,829
; PRIOR FILING DATE: 1999-02-23
; PRIOR APPLICATION NUMBER: PCT/GB97/02273
; PRIOR FILING DATE: 1997-08-22
; PRIOR APPLICATION NUMBER: 08/782,893
; PRIOR FILING DATE: 1996-12-27
; PRIOR APPLICATION NUMBER: GB9625996.5
; PRIOR FILING DATE: 1996-12-13
; PRIOR APPLICATION NUMBER: GB9617671.4
; PRIOR FILING DATE: 1996-08-23
; NUMBER OF SEQ ID NOS: 179
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 141
; LENGTH: 1315
; TYPE: PRT
; ORGANISM: Clostridium tetani
US-11-077-550-141

```

```

Query Match      26.8%; Score 206; DB 7; Length 1315;
Best Local Similarity 33.3%; Pred. No. 2.9e-11;
Matches 45; Conservative 35; Mismatches 45; Indels 10; Gaps 4;

QY 19 IKDNLDMRYENKPFIDISGYGNSISINGDVYIY-STNRNQFGIYSSKPSVNIQNND 77
Db 881 LKXSTILNLDINNDIISDISGNSSVITYPDAQLVPGINGKAIHLVNNSESSEVIVHKAMD 940

QY 78 IYNGRYQNFSTISFWVRIPKPFKNVL---NNEYTIIDCIKNN---SGWKISLANYK 129
Db 941 IEYNDMPNFTVSFWLVPK-VSASHLEQYGTNEYSISSMKKSLSIGSGWSVSLKGN 999

QY 130 LIWLTQDTAGNNQKL 144
Db 1000 LIWTLKDSAGEVRQI 1014

```

Search completed: March 2, 2006, 01:18:29
Job time : 6:84687 secs

GenCore version 5.1.7
Copyright (c) 1993 - 2006 Bioceleration Ltd.

OM protein - protein search, using sw model

Run on: March 2, 2006, 00:31:42 ; Search time 68.993 Seconds

(without alignments)
917.057 Million cell updates/sec

Title: US-08-981-087b-3

Perfect score: 761

Sequence: 1 VFNYTQMISDINKWIFV.....ITQNSNFLNQQGVYQKP 144

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 2443163 seqs, 439378781 residues

Total number of hits satisfying chosen parameters: 2443163

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : A Geneseq 21:*

- 1: geneseqp1980s:*
- 2: geneseqp1990s:*
- 3: geneseqp2000s:*
- 4: geneseqp2001s:*
- 5: geneseqp2002s:*
- 6: geneseqp2003as:*
- 7: geneseqp2003bs:*
- 8: geneseqp2004s:*
- 9: geneseqp2005s:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	761	100.0	144	AAW09016	Immunogen
2	761	100.0	431	AAW09014	Immunogen
3	761	100.0	432	AAY77138	Synthetic
4	761	100.0	432	AAB04103	Botulism
5	761	100.0	432	AAB04096	Botulism
6	761	100.0	645	AAE07894	Modified
7	761	100.0	645	AAE35692	Dipt HN d
8	761	100.0	657	AAE35693	BoNT/F-Hc
9	761	100.0	657	AAE35694	BoNT/F-Hc
10	761	100.0	685	AAE07893	Modified
11	761	100.0	862	AAE07890	Modified
12	761	100.0	887	AAE07892	Modified
13	761	100.0	979	AAE35713	BoNT/F-Hc
14	761	100.0	1032	AAE07901	C. botuli
15	761	100.0	1059	AAY93309	A mangane
16	761	100.0	1084	AAY93312	A mangane
17	761	100.0	1092	AAE07900	C. botuli
18	761	100.0	1192	AAE35711	BoNT/F-Hc
19	761	100.0	1192	AAE35710	BoNT/F-Hc
20	612	80.4	448	AAW68399	Botulism
21	497.5	65.4	419	AAB04095	Botulism
22	497.5	65.4	449	AAY77137	Synthetic
23	497.5	65.4	449	AAB04094	Botulism
24	497.5	65.4	452	AAW68396	Clostridi

25	495.5	65.1	451	2	AAW68395	AAW68395 Clostridi
26	466	61.2	660	4	AAE07898	AAE07898 Modified
27	440.5	57.9	382	3	AAB36303	BoNT/A pr
28	440.5	57.9	382	9	ADW24418	C botulin
29	440.5	57.9	382	9	ADZ60271	BoNT/A pr
30	440.5	57.9	425	9	ADZ60276	BoNT/A pr
31	440.5	57.9	432	3	AAY77142	Native bo
32	440.5	57.9	434	4	AAB04089	Botulism
33	440.5	57.9	435	4	AAB04090	Botulism
34	440.5	57.9	437	4	AAB04088	Botulism
35	440.5	57.9	438	2	AAE95008	Type A ne
36	440.5	57.9	438	2	AAW68399	Clostridi
37	440.5	57.9	438	3	AAY77134	Synthetic
38	440.5	57.9	445	2	AAW68391	Clostridi
39	440.5	57.9	462	2	AAE95009	Type A ne
40	440.5	57.9	462	2	AAW68390	Clostridi
41	440.5	57.9	837	3	AAY77140	Native bo
42	440.5	57.9	859	9	ADZ69764	Botulism
43	440.5	57.9	1067	3	AAE93307	Botulism
44	440.5	57.9	1092	3	AAE93310	A mangane
45	440.5	57.9	1295	5	AAU99339	Clostridi

ALIGNMENTS

RESULT 1

AAW09016
ID AAW09016 standard; protein; 144 AA.

XX AC AAW09016;

DT 17-OCT-2003 (revised)

DT 31-MAR-1997 (first entry)

XX Immunogenic type F botulinum toxin polypeptide (aa992-1135).

DE Botulinum toxin; neurotoxin; BoNT/F; immunogen; vaccine; botulism.

KW Clostridium botulinum; type F strain Langeland.

XX WO9641881-Al.

PD 27-DEC-1996.

XX 12-JUN-1996; 96WO-GB001409.

XX 12-JUN-1995; 95GB-00011909.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Elmore MJ, Mauchline ML, Minton NP, Pasechnik VA;

XX WPI; 1997-065467/06.

PT Immunogenic type F botulinum toxin polypeptide(s) - allows recombinant vaccine prodn.

XX Claim 5; Page 18-19; 37pp; English.

CC Novel polypeptides (AAW09014-17) respectively comprise amino acids 848-1278, 848-991, 992-1135 and 1136-1278 in the heavy chain of a type F botulinum neurotoxin (BoNT/F). They lack the L chain and HN epitopes necessary for metalloprotease activity and toxin internalisation. They are free of botulinum toxin activity but can induce protective immunity to a type F botulinum toxin, making them useful for vaccine prodn. CC Recombinant polypeptides can be produced in transformed host cells, esp. as fusion proteins, e.g. with maltose binding protein to facilitate purification. (Updated on 17-OCT-2003 to standardise OS field)

XX Sequence 144 AA;

XX Query Match 100.0%; Score 761; DB 2; Length 144;

Best Local Similarity 100.0%; Pred. No. 6.2e-74; Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VFNYTQMISISDYINKWIFVITNNRNGNSRIYINGNLIDEKSIISNLGDIHVSDNIIILFKI 60
 DB 1 VFNYTQMISISDYINKWIFVITNNRNGNSRIYINGNLIDEKSIISNLGDIHVSDNIIILFKI 60
 QY 61 VGCNDTRYVGYRKYFVDFTELKTEIETLYSDPDPSPILKDFWGNLYLLNKRYLLNLLR 120
 DB 61 VGCNDTRYVGYRKYFVDFTELKTEIETLYSDPDPSPILKDFWGNLYLLNKRYLLNLLR 120
 QY 121 TDKSITQNSNLFNLINQORGVYQKP 144
 DB 121 TDKSITQNSNLFNLINQORGVYQKP 144

RESULT 2

AAW09014
 ID AAW09014 standard; protein; 431 AA.
 AC AAW09014;
 XX 17-OCT-2003 (revised)
 DT 31-MAR-1997 (first entry)
 XX Immunogenic type F botulinum toxin heavy chain (aa848-1278).
 DE Botulinum toxin; neurotoxin; BoBr/F; immunogen; vaccine; botulism.
 KW Clostridium botulinum; type F strain Langeland.
 OS
 PN WO9641881-A1.
 XX 27-DEC-1996.
 PD
 XX 12-JUN-1996; 96WO-GB001409.
 PF
 XX 12-JUN-1995; 95GB-00011909.
 PR
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 PA
 XX Elmore MJ, Mauchline ML, Minton NP, Pasechnik VA;
 PI
 XX WPI: 1997-065467/06.
 DR N-PSDB; AAT48100.
 XX

Immunogenic type F botulinum toxin polypeptide(s) - allows recombinant vaccine prodn.

Claim 5; Page 16-17; 37pp; English.

CC A polypeptide (AAW09014) comprises the heavy chain (amino acids 848-1278) of a type F botulinum neurotoxin (BoNT/F), and can be produced using a synthetic gene (AAT48101) based on the natural gene sequence (AAT48100) for the heavy chain. The polypeptides and its fragments (see also CC AAW09015-17) lack the light chain and HN epitopes necessary for CC metalloprotease activity and toxin internalisation. They are free of CC botulinum toxin activity but can induce protective immunity to a type F CC botulinum toxin, making them useful for vaccine prodn. Recombinant CC polypeptides can be produced in transformed host cells, esp. as fusion CC proteins, e.g. with maltose binding protein to facilitate purification. CC (Updated on 17-OCT-2003 to standardise OS field)

XX Sequence 431 AA;

Query Match 100.0%; Score 761; DB 2; Length 431;
 Best Local Similarity 100.0%; Pred. No. 2.6e-73;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VFNYTQMISISDYINKWIFVITNNRNGNSRIYINGNLIDEKSIISNLGDIHVSDNIIILFKI 60
 DB 145 VFNYTQMISISDYINKWIFVITNNRNGNSRIYINGNLIDEKSIISNLGDIHVSDNIIILFKI 204

QY 61 VGCNDTRYVGYRKYFVDFTELKTEIETLYSDPDPSPILKDFWGNLYLLNKRYLLNLLR 120
 DB 205 VGCNDTRYVGYRKYFVDFTELKTEIETLYSDPDPSPILKDFWGNLYLLNKRYLLNLLR 264
 QY 121 TDKSITQNSNLFNLINQORGVYQKP 144
 DB 265 TDKSITQNSNLFNLINQORGVYQKP 288

RESULT 3

AAW77138
 ID AAW77138 standard; protein; 432 AA.

XX AAW77138;
 AC
 XX 08-MAY-2000 (first entry)
 DT
 XX Synthetic botulinum neurotoxin serotype F (BoNTF) C-terminal fragment.
 DE Botulinum neurotoxin; heavy chain; BoNT; serotype F; C-terminal fragment;
 KW Venezuelan equine encephalitis virus replicon; VEE; botulism; vaccine;
 KW diagnosis; drug screening.
 XX Clostridium botulinum.
 OS Synthetic.

XX WO200002524-A2.

PN 20-JAN-2000.

PD 09-JUL-1999; 99WO-US015570.

PF 10-JUL-1998; 98US-0092416P.

PR 12-MAY-1999; 99US-0133870P.

XX (USME-) US MEDICAL RES INST INFECTIOUS DISEASES.

XX Lee JS, Pushko P, Smith JP, Parker M, Dertzbaugh MT, Smith L;

XX WPI: 2000-160827/14.

DR N-PSDB; AAZ87216.

XX Novel Botulinum neurotoxin vaccine comprising a fragment from botulinum toxin serotypes A-G, is used for inducing an immune response against botulinum.

XX Claim 27; Page; 54pp; English.

XX The invention relates to novel vaccines that induce a protective immune response against botulinum neurotoxin (BoNT) serotypes A, B, C, D, E, F and G (BoNTA-BoNTG). The vaccine of the invention is novel recombinant DNA construct comprising a vector, and at least one nucleic acid fragment comprising a C-terminal heavy chain fragment (Hc) from BoNT serotypes A-G. In preferred embodiments of the invention, the vector is a Venezuelan equine encephalitis virus (VEE) replicon vector. Use of this vector results in the production of large amounts of a protein encoded by a sequence cloned into the replicon. The constructs are used to produce vaccines against botulism. The proteins can also be used as diagnostic tools for the diagnosis of botulism. The transformed host cells can be used to analyse the effectiveness of drugs and agents which inhibit toxin effects. The vaccine currently used against botulism is dangerous and expensive to produce, and contains formalin, which is very painful for the recipient. Also, the vaccine is incomplete, in that only 5 of the 7 serotypes are represented in the formulation. The novel vaccine of overcomes these problems, as it is easily purified, and available in large quantities. It is also expressed in the lymph nodes for a better immune response. Sequences AAY77134-Y77139 represent synthetic BoNT Hc fragments used in the present invention. The DNA encoding these sequences had been optimised for codon usage for expression in yeast. Note: This sequence is not given in the specification, but is decoded from the BoNTF Hc DNA sequence given on pages 45-46

XX Sequence 432 AA;

Query Match 100.0%; Score 761; DB 3; Length 432;
 Best Local Similarity 100.0%; Pred. No. 2.6e-73;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
 DB 146 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 205

QY 61 VGCNDRYVGIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLYNNKRYVLLNLLR 120
 DB 206 VGCNDRYVGIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLYNNKRYVLLNLLR 265

QY 121 TDKSITQNSNLFNLINQOQGVYQKP 144
 DB 266 TDKSITQNSNLFNLINQOQGVYQKP 289

RESULT 4
 AAB04103
 ID AAB04103 standard; protein; 432 AA.

AC AAB04103;
 XX
 XX
 XX 11-APR-2001 (first entry)
 XX Botulinum toxin heavy chain C-terminal sequence (serotype F).
 DE Botulinum toxin; neurotoxin; heavy chain; recombinant expression;
 XX Botulinum toxin; neurotoxin; heavy chain; recombinant expression;
 KW recombinant vector; antigen; immune response; vaccine; bacterium;
 KW infection.
 XX

OS Synthetic.
 OS Clostridium botulinum.
 XX WO200067700-A2.
 XX 16-NOV-2000.

XX 12-MAY-2000; 2000WO-US012890.
 XX 12-MAY-1999; 99US-0133865P.
 PR 12-MAY-1999; 99US-0133866P.
 PR 12-MAY-1999; 99US-0133867P.
 PR 12-MAY-1999; 99US-0133868P.
 PR 12-MAY-1999; 99US-0133869P.
 PR 12-MAY-1999; 99US-0133873P.
 PR 29-JUL-1999; 99US-0146192P.

XX (USSA) US ARMY MEDICAL RES & MATERIAL COMMAND.

XX Smith LA, Byrne MP, Middlebrook JL, Lapenotiere H;

XX WPI; 2001-016048/02.
 DR N-PSDB; AAA54499.

XX New nucleic acids encoding the carboxy- or amino-terminal portions of the
 PT heavy chain of botulinum neurotoxin of serotype A-G, useful as vaccine
 PT against botulinum.

XX Disclosure; Fig 18b; 73pp; English.

XX Botulinum neurotoxins are translated as a single 150 kDa polypeptide chain
 CC and then posttranslationally nicked, forming a dichain consisting of a
 CC 100 kDa heavy chain and a 50 kDa light chain which remain linked by a
 CC disulfide bond. Nucleic acids encoding the carboxy-terminal (HC) or amino
 CC -terminal (HN) portion of the heavy chain of botulinum neurotoxin (BoNT)
 CC can be used in recombinant expression vectors and expressed in
 CC transformed cells to produce peptide antigens useful for eliciting an
 CC immune response to give protective immunity against botulinum neurotoxin,
 CC which causes botulinum. The nucleic acids are expressible in a recombinant
 CC organisms such as Escherichia coli or Pichia pastoris. The use of
 CC recombinant nucleic acids are advantageous since it eliminates the need

CC to culture large quantities of hazardous toxin-producing bacterium.
 CC Production yield from the genetically engineered product is also high and
 CC cost of production is lower. The nucleic acids can be derived from
 CC Clostridium botulinum serotypes A-G

SQ Sequence 432 AA;

Query Match 100.0%; Score 761; DB 4; Length 432;
 Best Local Similarity 100.0%; Pred. No. 2.6e-73;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
 DB 146 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 205

QY 61 VGCNDRYVGIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLYNNKRYVLLNLLR 120
 DB 206 VGCNDRYVGIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLYNNKRYVLLNLLR 265

QY 121 TDKSITQNSNLFNLINQOQGVYQKP 144
 DB 266 TDKSITQNSNLFNLINQOQGVYQKP 289

RESULT 5
 AAB04096

ID AAB04096 standard; protein; 432 AA.

AC AAB04096;

XX 11-APR-2001 (first entry)

XX Botulinum toxin heavy chain C-terminal sequence (serotype F).

XX Botulinum toxin; neurotoxin; heavy chain; recombinant expression;
 KW recombinant vector; antigen; immune response; vaccine; bacterium;
 KW infection.

XX Synthetic.
 OS Clostridium botulinum.

XX WO200067700-A2.

XX 16-NOV-2000.

XX 12-MAY-2000; 2000WO-US012890.

XX 12-MAY-1999; 99US-0133865P.

PR 12-MAY-1999; 99US-0133866P.

PR 12-MAY-1999; 99US-0133867P.

PR 12-MAY-1999; 99US-0133868P.

PR 12-MAY-1999; 99US-0133869P.

PR 12-MAY-1999; 99US-0133873P.

PR 29-JUL-1999; 99US-0146192P.

XX (USSA) US ARMY MEDICAL RES & MATERIAL COMMAND.

XX Smith LA, Byrne MP, Middlebrook JL, Lapenotiere H;

XX WPI; 2001-016048/02.

DR N-PSDB; AAA54499.

XX New nucleic acids encoding the carboxy- or amino-terminal portions of the
 PT heavy chain of botulinum neurotoxin of serotype A-G, useful as vaccine
 PT against botulinum.

XX Claim 3; Fig 9b; 73pp; English.

XX Botulinum neurotoxins are translated as a single 150 kDa polypeptide chain
 CC and then posttranslationally nicked, forming a dichain consisting of a
 CC 100 kDa heavy chain and a 50 kDa light chain which remain linked by a
 CC disulfide bond. Nucleic acids encoding the carboxy-terminal (HC) or amino
 CC -terminal (HN) portion of the heavy chain of botulinum neurotoxin (BoNT)

CC can be used in recombinant expression vectors and expressed in
 CC transformed cells to produce peptide antigens useful for eliciting an
 CC immune response to give protective immunity against botulinum neurotoxin,
 CC which causes botulism. The nucleic acids are expressible in a recombinant
 CC organism such as *Escherichia coli* or *Pichia pastoris*. The use of
 CC recombinant nucleic acids are advantageous since it eliminates the need
 CC to culture large quantities of hazardous toxin-producing bacterium.
 CC Production yield from the genetically engineered product is also high and
 CC cost of production is lower. The nucleic acids can be derived from
 CC Clostridium botulinum serotypes A-G

XX SQ Sequence 432 AA;

Query Match 100.0%; Score 761; DB 4; Length 432;
 Best Local Similarity 100.0%; Pred. No. 2.6e-73;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 60
 Db 146 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 205
 Qy 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
 Db 206 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 265
 Qy 121 TDKSITQNSNLFNINQQRGVYQKP 144
 Db 266 TDKSITQNSNLFNINQQRGVYQKP 289

RESULT 6

AAE07894
 ID AAE07894 standard; protein; 645 AA.

XX AC AAE07894;

XX DT 11-SEP-2003 (revised)
 XX DT 01-NOV-2001 (first entry)

DE Modified clostridial heavy chain fragment #1.

XX KW Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 XX KW tumour; infection; neurodegenerative disease; Gene therapy; chimeric;
 XX KW diphtheria neurotoxin; botulinum neurotoxin type F; BoNT/F.

XX OS Corynebacterium diphtheriae.
 XX OS Clostridium botulinum.
 XX OS Chimeric.

XX PN WO200158936-A2.

XX PD 16-AUG-2001.

XX PF 04-DEC-2000; 2000WO-GB004644.

XX PR 02-DEC-1999; 99GB-00028530.

XX PR 07-APR-2000; 2000GB-00008658.

XX FA (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX PI Shone CC, Sutton JM, Silman N;

XX DR WPI; 2001-514643/56.

XX PT New non toxic polypeptide for delivery of a therapeutic agent for the
 treatment of a CNS disorder comprising a binding domain that translocates
 the therapeutic agent into the neuronal cells.

PS Example 2; Page 44; 50pp; English.

CC The invention relates to a non toxic polypeptide, for delivery of a
 CC therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as

CC Hc) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial neurotoxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. The polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful to treat disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence
 CC is modified clostridial heavy chain fragment. This sequence is
 CC constructed by fusing the binding domain of botulinum neurotoxin type F
 CC (BoNT/F) with translocation domain of diphtheria neurotoxin. (Updated on
 CC 11-SEP-2003 to standardise OS field)

XX SQ Sequence 645 AA;

Query Match 100.0%; Score 761; DB 4; Length 645;
 Best Local Similarity 100.0%; Pred. No. 4.3e-73;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 60
 Db 359 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 418
 Qy 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
 Db 419 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 478
 Qy 121 TDKSITQNSNLFNINQQRGVYQKP 144
 Db 479 TDKSITQNSNLFNINQQRGVYQKP 502

RESULT 7

AAE35692
 ID AAE35692 standard; protein; 645 AA.

XX AC AAE35692;

XX DT 23-OCT-2003 (revised)

XX DT 17-JUN-2003 (first entry)

DE DiPT HN domain-BoNT/F-Hc fusion construct.

XX KW Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 XX KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
 XX KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 XX KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
 XX KW translocation domain; HN domain; DiPT; Hc; botulinum type F neurotoxin;
 XX KW binding domain; BoNT/F.

XX OS Corynebacterium diphtheriae.

XX OS Clostridium botulinum.

XX OS Chimeric.

XX PN WO200296467-A2.

XX PD 05-DEC-2002.

XX PF 21-MAY-2002; 2002WO-GB002384.

XX PR 24-MAY-2001; 2001GB-00013687.

XX FA (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX PI Sutton JM, Shone CC;

XX DR WPI; 2003-167247/16.

XX PT Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.

XX WO200296467-A2.
 XX 05-DEC-2002.
 XX 21-MAY-2002; 2002WO-GB002384.
 XX 24-MAY-2001; 2001GB-00012687.
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX Sutton JM, Shone CC;
 XX WPI; 2003-167247/16.
 XX Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.
 XX Example 12; Page 63-65; 130pp; English.
 XX The invention relates to a conjugate comprising an injected bacterial
 CC effector protein and a carrier that targets the effector protein to a
 CC target cell. Pharmaceutical composition of the invention is useful for a
 CC treatment selected from promoting or inhibiting survival of cells;
 CC preventing and reversing damage to cells; killing cells; promoting or
 CC inhibiting the growth of cells; apoptosis; release of an inflammatory
 CC mediator from cells; division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating Prion disease, Alzheimer's disease and wide range of disorders
 CC including muscle spasms such as blepharospasm, torticollis and
 CC hypersecretion disorders such as chronic obstructive pulmonary disease
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
 CC domain (DtpT-HN domain), botulinum type F neurotoxin binding domain
 CC (BONT/F-Hc) from Clostridium botulinum and factor Xa linker peptide. This
 CC sequence is used in the exemplification of the invention
 XX Sequence 657 AA;
 Query Match 100.0%; Score 761; DB 6; Length 657;
 Best Local Similarity 100.0%; Pred. No. 4.4e-73;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNIIFKI 60
 DB 371 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNIIFKI 430
 QY 61 VGCNDTRYVGIRYKVFDTLTKTEIETLYSDPSPILKDFWGNLYLLNKRYYLLNLLR 120
 DB 431 VGCNDTRYVGIRYKVFDTLTKTEIETLYSDPSPILKDFWGNLYLLNKRYYLLNLLR 490
 QY 121 TDKSITQNSNLFNINQORGVYQKP 144
 DB 491 TDKSITQNSNLFNINQORGVYQKP 514
 RESULT 10
 AAE07893
 ID AAE07893 standard; protein; 685 AA.
 XX AAE07893;
 XX 01-NOV-2001 (first entry)
 XX Modified clostridial heavy chain-superoxide dismutase conjugate #5.
 XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
 XX

KW superoxide dismutase; SOD; botulinum neurotoxin type F; BONT/F.
 XX Geobacillus stearothermophilus.
 OS Influenza virus.
 OS Clostridium botulinum.
 OS Synthetic.
 OS Chimeric.
 XX WO200158936-A2.
 XX 16-AUG-2001.
 XX 04-DEC-2000; 2000WO-GB004644.
 XX 02-DEC-1999; 99GB-00028530.
 XX 07-APR-2000; 2000GB-00008658.
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX Shone CC, Sutton JM, Silman N;
 XX WPI; 2001-514643/56.
 XX New non toxic polypeptide for delivery of a therapeutic agent for the
 PT treatment of a CNS disorder comprising a binding domain that translocates
 PT the therapeutic agent into the neuronal cells.
 XX Example 9; Page 43; 50pp; English.
 XX The invention relates to a non toxic polypeptide, for delivery of a
 CC therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 CC Hc) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial neurotoxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. The polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful to treat disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence
 CC is modified clostridial heavy chain-superoxide dismutase conjugate. This
 CC conjugate comprises bacterial Mn-superoxide dismutase (MnSOD) from
 CC Bacillus stearothermophilus, linker that can be cleaved by factor Xa,
 CC translocation peptide from influenza virus and a neuronal cell-specific
 CC binding domain from botulinum neurotoxin type F (BONT/F)
 XX Sequence 685 AA;
 Query Match 100.0%; Score 761; DB 4; Length 685;
 Best Local Similarity 100.0%; Pred. No. 4.6e-73;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNIIFKI 60
 DB 399 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNIIFKI 458
 QY 61 VGCNDTRYVGIRYKVFDTLTKTEIETLYSDPSPILKDFWGNLYLLNKRYYLLNLLR 120
 DB 459 VGCNDTRYVGIRYKVFDTLTKTEIETLYSDPSPILKDFWGNLYLLNKRYYLLNLLR 518
 QY 121 TDKSITQNSNLFNINQORGVYQKP 144
 DB 519 TDKSITQNSNLFNINQORGVYQKP 542
 RESULT 11
 AAE07890
 ID AAE07890 standard; protein; 862 AA.
 XX AAE07890;
 XX

DT 01-NOV-2001 (first entry)
XX Modified clostridial heavy chain-superoxide dismutase conjugate #2.
DE Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
XX tumour; infection; neurodegenerative disease; gene therapy; chimeric;
KW superoxide dismutase; SOD; diphtheria neurotoxin;
KW botulinum neurotoxin type F; BoNT/F.
XX Geobacillus stearothermophilus.
OS Corynebacterium diphtheriae.
OS Clostridium botulinum.
OS Synthetic.
OS Chimeric.
XX WO200158936-A2.
XX 16-AUG-2001.
XX 04-DEC-2000; 2000WO-GB004644.
XX 02-DEC-1999; 99GB-00028530.
PR 07-APR-2000; 2000GB-00008658.
XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
XX Shone CC, Sutton JM, Silman N;
PI WPI; 2001-514643/56.
XX New non toxic polypeptide for delivery of a therapeutic agent for the
PT treatment of a CNS disorder comprising a binding domain that translocates
PT the therapeutic agent into the neuronal cells.
XX Example 9; Page 40; 50pp; English.
XX The invention relates to a non toxic polypeptide, for delivery of a
CC therapeutic agent to a neuronal cell, which comprises a binding domain
CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
CC Hc) that binds to the neuronal cell and a translocation domain (amino
CC terminal half of HC, designated as HN), that translocates the therapeutic
CC agent into the neuronal cell, where the translocation domain is not a HN
CC domain of a clostridial neurotoxin and is not a fragment or derivative of
CC a HN domain of a clostridial toxin. Polypeptides of the invention are
CC useful for the treatment of a disease state associated with neuronal
CC cells. The polypeptide constructs are useful for delivering therapeutic
CC substances to neuronal cells. They are useful to treat disorders of the
CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
CC and infection. They are also useful in gene therapy. The present sequence
CC is modified clostridial heavy chain-superoxide dismutase conjugate. This
CC conjugate comprises bacterial Mn-superoxide dismutase (MnSOD), from
CC Bacillus stearothermophilus, linker that can be cleaved by factor Xa,
CC translocation domain from diphtheria neurotoxin and a neuronal cell-
CC specific binding domain from botulinum neurotoxin type F (BoNT/F)
XX Sequence 862 AA;
SQ Query Match 100.0%; Score 761; DB 4; Length 862;
Best Local Similarity 100.0%; Pred. No. 6.2e-73;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSI NGLGDIHVSDNLFKI 60
DB 576 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSI NGLGDIHVSDNLFKI 635
QY 61 VGNDRYVGIRYFKYFDTELGTETLYSDPEPSILKDPWGNLYLLNKRYLLNLRL 120
DB 636 VGNDRYVGIRYFKYFDTELGTETLYSDPEPSILKDPWGNLYLLNKRYLLNLRL 695
QY 121 TDKSITQNSNLFNLINQORGYYQKP 144
DB 696 TDKSITQNSNLFNLINQORGYYQKP 719

RESULT 12

AAE07892 AAE07892 standard; protein; 887 AA.

XX AAE07892;

AC AAE07892;

XX 01-NOV-2001 (first entry)

XX Modified clostridial heavy chain-superoxide dismutase conjugate #4.

XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;

KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;

KW superoxide dismutase; SOD; diphtheria neurotoxin; human;

KW botulinum neurotoxin type F; BoNT/F.

XX Homo sapiens.

OS Geobacillus stearothermophilus.

OS Corynebacterium diphtheriae.

OS Clostridium botulinum.

OS Synthetic.

OS Chimeric.

XX WO200158936-A2.

XX 16-AUG-2001.

XX 04-DEC-2000; 2000WO-GB004644.

XX 02-DEC-1999; 99GB-00028530.

PR 07-APR-2000; 2000GB-00008658.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Shone CC, Sutton JM, Silman N;

PI WPI; 2001-514643/56.

XX New non toxic polypeptide for delivery of a therapeutic agent for the

PT treatment of a CNS disorder comprising a binding domain that translocates

PT the therapeutic agent into the neuronal cells.

XX Example 9; Page 42; 50pp; English.

XX The invention relates to a non toxic polypeptide, for delivery of a

CC therapeutic agent to a neuronal cell, which comprises a binding domain

CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as

CC Hc) that binds to the neuronal cell and a translocation domain (amino

CC terminal half of HC, designated as HN), that translocates the therapeutic

CC agent into the neuronal cell, where the translocation domain is not a HN

CC domain of a clostridial neurotoxin and is not a fragment or derivative of

CC a HN domain of a clostridial toxin. Polypeptides of the invention are

CC useful for the treatment of a disease state associated with neuronal

CC cells. The polypeptide constructs are useful for delivering therapeutic

CC substances to neuronal cells. They are useful to treat disorders of the

CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours

CC and infection. They are also useful in gene therapy. The present sequence

CC is modified clostridial heavy chain-superoxide dismutase conjugate. This

CC conjugate comprises a mitochondrial leader sequence from human Mn-

CC superoxide dismutase (MnSOD), MnSOD from Bacillus stearothermophilus,

CC linker that can be cleaved by thrombin, translocation domain from

CC diphtheria neurotoxin and a neuronal cell-specific binding domain from

CC botulinum neurotoxin type F (BoNT/F)

XX Sequence 887 AA;
SQ Query Match 100.0%; Score 761; DB 4; Length 887;
Best Local Similarity 100.0%; Pred. No. 6.4e-73;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSI NGLGDIHVSDNLFKI 60
DB 601 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSI NGLGDIHVSDNLFKI 660

QY 61 VGCNDRYVGIRYKVFDETLGKTEIETLYSDPDPSSILKDFWGNLYLNKRYLLNLLR 120
 DB 661 VGCNDRYVGIRYKVFDETLGKTEIETLYSDPDPSSILKDFWGNLYLNKRYLLNLLR 720
 QY 121 TDKSITQNSNFLNINQQRGVYQKP 144
 DB 721 TDKSITQNSNFLNINQQRGVYQKP 744

RESULT 13
 AAE35713
 ID AAE35713 standard; protein; 979 AA.
 AC AAE35713;
 XX
 DT 17-JUN-2003 (first entry)
 DE BoNT/F-Hc-DiPT HN domain-factor Xa linker-YopT protein fusion construct.
 DE
 KW Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 KW infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
 KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;
 KW BoNT/F; translocation domain; HN domain; DiPT; Hc; binding domain;
 KW botulinum type F neurotoxin; targetted effector protien; YopT.
 XX
 OS Corynebacterium diphtheriae.
 OS Clostridium botulinum.
 OS Yersinia pestis.
 OS Unidentified.
 OS Chimeric.
 XX
 PN WO200296467-A2.
 XX
 PD 05-DEC-2002.
 XX
 XX 21-MAY-2002; 2002WO-GB002384.
 XX
 XX 24-MAY-2001; 2001GB-00012687.
 XX
 PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.

PT Conjugate for modulating cell survival and cell growth, modulating
 PT release of inflammatory mediator from cells, comprises injected bacterial
 PT effector protein and a carrier that targets the protein to target cell.
 XX
 XX Example 12; Page 110-114; 130pp; English.
 XX
 XX The invention relates to a conjugate comprising an injected bacterial
 CC effector protein and a carrier that targets the effector protein to a
 CC target cell. Pharmaceutical composition of the invention is useful for a
 CC treatment selected from promoting or inhibiting survival of cells;
 CC preventing and reversing damage to cells; killing cells; promoting or
 CC inhibiting the growth of cells; apoptosis, release of an inflammatory
 CC mediator from cells, division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating Prion disease, Alzheimer' disease and wide range of disorders
 CC including muscle spasms such as blepharospasm, torticollis and
 CC hypersecretion disorders such as chronic obstructive pulmonary disease
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
 CC domain (DiPT-HN domain), botulinum type F neurotoxin binding domain
 CC (BoNT/F-Hc) from Clostridium botulinum and factor Xa linker peptide and
 CC Yersinia pestis targetted effector protein YopT. This sequence is used in

CC the exemplification of the invention
 XX
 SQ Sequence 979 AA;
 Query Match 100.0%; Score 761; DB 6; Length 979;
 Best Local Similarity 100.0%; Pred. No. 7.3e-73;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKISINLGDHVSNDILFKI 60
 DB 693 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKISINLGDHVSNDILFKI 752
 QY 61 VGCNDRYVGIRYKVFDETLGKTEIETLYSDPDPSSILKDFWGNLYLNKRYLLNLLR 120
 DB 753 VGCNDRYVGIRYKVFDETLGKTEIETLYSDPDPSSILKDFWGNLYLNKRYLLNLLR 812
 QY 121 TDKSITQNSNFLNINQQRGVYQKP 144
 DB 813 TDKSITQNSNFLNINQQRGVYQKP 836
 RESULT 14
 AAE07901
 ID AAE07901 standard; protein; 1032 AA.
 XX
 AC AAE07901;
 XX
 DT 01-NOV-2001 (first entry)
 DE
 DE C. botulinum C2 translocation domain with BoNT/F-binding domain #2.
 XX
 KW Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 KW tumour; infection; neurodegenerative disease; gene therapy;
 KW botulinum neurotoxin type F; BoNT/F.
 XX
 OS Clostridium botulinum.
 XX
 XX WO200158936-A2.
 XX
 PD 16-AUG-2001.
 XX
 XX 04-DEC-2000; 2000WO-GB004644.
 XX
 XX 02-DEC-1999; 99GB-00028530.
 PR
 PR 07-APR-2000; 2000GB-00008658.
 XX
 XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 PA
 XX Shone CC, Sutton JM, Silman N;
 XX WPI; 2001-514643/56.
 DR
 XX New non toxic polypeptide for delivery of a therapeutic agent for the
 PT treatment of a CNS disorder comprising a binding domain that translocates
 PT the therapeutic agent into the neuronal cells.
 XX
 XX Example 2; Page 48; 50pp; English.
 XX
 XX The invention relates to a non toxic polypeptide, for delivery of a
 CC therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 CC Hc) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial neurotoxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. The polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful to treat disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence
 CC is C. botulinum C2 enterotoxin translocation domain with botulinum
 CC neurotoxin type F (BoNT/F) binding domain used in the exemplification of

CC the invention
XX
SQ Sequence 1032 AA;
Query Match 100.0%; Score 761; DB 4; Length 1032;
Best Local Similarity 100.0%; Pred. No. 7.8e-73;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSTISNLGDIHVSNDILFKI 60
DB 746 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSTISNLGDIHVSNDILFKI 805
QY 61 VGCNDTRYVGIYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLYNNKRYLLNLLR 120
DB 806 VGCNDTRYVGIYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLYNNKRYLLNLLR 865
QY 121 TDKSITQNSNLFNLINQORGVYQKP 144
DB 866 TDKSITQNSNLFNLINQORGVYQKP 889
RESULT 15
AA93309
ID AA93309 standard; protein; 1059 AA.
XX
AC AA93309;
XX
DT 04-SEP-2000 (first entry)
XX
DE A manganese superoxide dismutase (Mn-SOD) construct.
XX
KW Manganese superoxide dismutase; Mn-SOD; SOD; neuronal cell;
KW neuronal cell targeting component; NCTC; neuronal disease;
KW oxidative stress; ischemic stroke; trauma; Parkinson's disease;
KW Huntington's disease; motor neurone disease;
KW botulinum neurotoxin serotype F.
XX
OS Synthetic.
OS Geobacillus stearothermophilus.
OS Clostridium botulinum.
XX
PN WO200028041-A1.
XX
PD 18-MAY-2000.
XX
PF 05-NOV-1999; 99WO-GB003699.
XX
PR 05-NOV-1998; 98GB-00024282.
XX
PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
XX
PI Shone CC, Sutton JM, Hallis B, Silman N;
XX
DR WPI; 2000-376553/32.
XX
PT Novel composition, comprising superoxide dismutase linked by a cleavable
PT linker to a neuronal cell targeting component useful for delivering
PT superoxide dismutase to neuronal cells to treat ischemia.
XX
PS Disclosure; Page 48-51; 65pp; English.
XX
CC The present sequence represents a construct of the invention, comprising
CC a manganese superoxide dismutase (Mn-SOD) polypeptide, a linker that can
CC be cleaved by thrombin, and a heavy chain derived from botulinum
CC neurotoxin serotype F. The specification describes a composition for
CC delivery of SOD to neuronal cells. The composition comprises SOD linked,
CC by a cleavable linker, to a neuronal cell targeting component (NCTC).
CC This component has a domain that binds to a neuronal cell and a domain
CC that translocates the SOD of the composition into the neuronal cell.
CC After translocation, the linker is cleaved to release the SOD. The
CC composition is useful for treating neuronal diseases caused or augmented
CC by oxidative stress, such as ischemic stroke, trauma, Parkinson's
CC disease, Huntington's disease and motor neurone diseases

XX
SQ Sequence 1059 AA;
Query Match 100.0%; Score 761; DB 3; Length 1059;
Best Local Similarity 100.0%; Pred. No. 8.1e-73;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSTISNLGDIHVSNDILFKI 60
DB 773 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSTISNLGDIHVSNDILFKI 832
QY 61 VGCNDTRYVGIYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLYNNKRYLLNLLR 120
DB 833 VGCNDTRYVGIYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLYNNKRYLLNLLR 892
QY 121 TDKSITQNSNLFNLINQORGVYQKP 144
DB 893 TDKSITQNSNLFNLINQORGVYQKP 916
Search completed: March 2, 2006, 00:38:56
Job time : 69.993 secs

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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:39:17 ; Search time 12.0278 Seconds
(without alignments)
1151.928 Million cell updates/sec

Title: US-08-981-087B-3
Perfect score: 761
Sequence: 1 VFNTQMSISDYINKWIFV.....ITQNSNLFNQQRGVVYQK 144

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283416 seqs, 96216763 residues

Total number of hits satisfying chosen parameters: 283416

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : PIR 80: *
1: PIR1: *
2: PIR2: *
3: PIR3: *
4: PIR4: *

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	622	81.7	1268	2 S33411	botulinum neurotox
2	612	80.4	1274	2 I40813	neurotoxin type F
3	497.5	65.4	1252	2 S21178	botulinum neurotox
4	495.5	65.1	1251	2 JH0256	botulinum neurotox
5	440.5	57.9	1296	1 BTCLAB	botulinum neurotox
6	423.5	55.7	1296	2 I40645	botulinum neurotox
7	296.5	39.0	1297	2 S39791	neurotoxin - Clost
8	296	38.9	1291	2 I40631	non-proteolytic bo
9	284.5	37.4	1291	1 A48940	botulinum neurotox
10	245.5	32.3	1276	2 S11455	botulinum neurotox
11	240.5	31.6	1315	1 BTCLTN	botulinum neurotox
12	239	31.4	1291	2 A43777	botulinum neurotox
13	239	31.4	1291	2 S46431	botulinum neurotox
14	225	29.6	1285	2 S70582	botulinum neurotox
15	127	16.7	1162	2 A47708	progenitor toxin n
16	120	15.8	1162	2 I40817	botulinum toxin no
17	117	15.4	1193	2 JCA901	botulinum neurotox
18	116	15.2	1193	2 S68218	botulinum neurotox
19	114	15.0	1196	2 JQ1467	botulinum neurotox
20	114	15.0	1196	2 S46430	botulinum neurotox
21	105	13.8	1165	2 I40644	botulinum neurotox
22	92.5	12.2	315	2 H84938	flagellar motor sw
23	92	12.1	608	2 T28301	ORF MSV140 hypothe
24	89.5	11.8	460	2 I40799	endo-1,4-beta-gluc
25	89.5	11.8	1487	2 AG2560	hypotheical prote
26	89	11.7	2366	2 S10317	toxin B - Clostrid
27	89	11.7	2367	2 S70172	toxin B - Clostrid
28	86	11.3	2364	2 I40884	cytotoxin L - Clos
29	85	11.2	135	2 B97148	probable esterase

hypothetical prote
DNA-directed RNA p
hypothetical prote
hypothetical prote
hypothetical prote
probable membrane
regulatory protein
protein g377 - mal
hypothetical prote
carbamoyl-phosphat
endo-beta-1,4-gluc
hypothetical prote
28S proteasome reg
multiple banded an
hypothetical prote
rep protein - elim

ALIGNMENTS

RESULT 1

S33411 botulinum neurotoxin type F - Clostridium barati

C:Species: Clostridium barati

C:Date: 13-Jan-1995 #sequence_revision 13-Jan-1995 #text_change 09-Jul-2004

C:Accession: S33411; S31860

R:Thompson, D.E.; Huxson, R.A.; East, A.K.; Allaway, D.; Collins, M.D.; Richardson, P.T.

FEMS Microbiol. Lett. 106, 175-182, 1993

A:Title: Nucleotide sequence of the gene coding for Clostridium barati type F neurotoxin

A:Reference number: S33411; MUID:93252228; PMID:8486245

A:Accession: S33411

A:Status: preliminary

A:Molecule type: DNA

A:Residues: 1-1268 <THO>

A:Cross-references: UNIPROT:Q45851; UNIPARC:UPI00000BAF8C; EMBL:X68262; NID:G49138; PIDN

C:Superfamily: tetanus toxin

C:Keywords: neurotoxin

Query Match 81.7%; Score 622; DB 2; Length 1268;

Best Local Similarity 79.0%; Pred. No. 3.3e-48;

Matches 113; Conservative 16; Mismatches 14; Indels 0; Gaps 0;

Qy 1 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIINLGDHVSNDILFKI 60

Db 983 VFNTQMDISDYINKWTFVTITNNRLGHSKLYINGNLTDQKSIINLGNHVDNLFKI 1042

Qy 61 VGCNDRYVGIRYFKVFDTELKTEITLYSDEPDPSILKDFWGNLYLYNRYLLNLRL 120

Db 1043 VGCNDRYVGIRYFKIFNMELDKTEITLYHSEPDSTILKDFWGNLYLYNKKYLLNLK 1102

Qy 121 TDKSITQNSNLFNINQQRGVVYQK 143

Db 1103 PMSVTKNSDILNINRQGIYSK 1125

Qy 121 TDKSITQNSNLFNINQQRGVVYQK 143

Db 1103 PMSVTKNSDILNINRQGIYSK 1125

Qy 121 TDKSITQNSNLFNINQQRGVVYQK 143

Db 1103 PMSVTKNSDILNINRQGIYSK 1125

Qy 121 TDKSITQNSNLFNINQQRGVVYQK 143

Db 1103 PMSVTKNSDILNINRQGIYSK 1125

Qy 121 TDKSITQNSNLFNINQQRGVVYQK 143

Db 1103 PMSVTKNSDILNINRQGIYSK 1125

Qy 121 TDKSITQNSNLFNINQQRGVVYQK 143

Db 1103 PMSVTKNSDILNINRQGIYSK 1125

Qy 121 TDKSITQNSNLFNINQQRGVVYQK 143

Db 1103 PMSVTKNSDILNINRQGIYSK 1125

Qy 121 TDKSITQNSNLFNINQQRGVVYQK 143

Db 1103 PMSVTKNSDILNINRQGIYSK 1125

Qy 121 TDKSITQNSNLFNINQQRGVVYQK 143

Db 1103 PMSVTKNSDILNINRQGIYSK 1125

Qy 121 TDKSITQNSNLFNINQQRGVVYQK 143

Db 1103 PMSVTKNSDILNINRQGIYSK 1125

[illegible]

Query Match 38.9%; Score 296; DB 2; Length 1291;
Best Local Similarity 39.9%; Pred.No.1.le-15;
Matches 63; Conservative 29; Mismatches 44; Indels 22; Gaps 5;

Qy 2 FNYTQMISIDYINKWIFVITTTNRLGNSRIYINGNLIDEKSIINLGDIHVSDNILFKIV 61
| | | | | : | | | | | : | | | | | : | | | | | : | | | | | :
Db 987 FEYNIREDISIYNRWFFVITTN-LDNAKIYINGTLSENMWDIKDIGEVIINGEITPKLD 1045

Qy 62 GCND-TRYGIRPYPVDTHGLKTEITLVSDEDPSPILKDFWGNLYLLNKRYLLNL-- 118
| | | | | : | | | | | : | | | | | : | | | | | : | | | | | :
Db 1046 GDVDRTOFIWKYFIEFTIQLNOSNIKEIIKYQSLEYLKDFWGNPLMYKNKEYMFNAGN 1105

Qy 119 -----LRTEKSI-----TQSNFLNINQQRGVY 141
| | | | | : | | | | | : | | | | | : | | | | | :
Db 1106 KNSYIKLVKDSSVGEEILRSKYNQNSNYIN---YRNLY 1140

RESULT 9
A48940
botulinysin (EC 3.4.24.69) B precursor - Clostridium botulinum
N/Alternate names: botulinum neurotoxin type B (BoNT/B)
C/Species: Clostridium botulinum
C/Date: 19-Dec-1993 #sequence_revision 18-Nov-1994 #text_change 09-Jul-2004
C/Accession: A48940; S48105; S21575; A42871; S07155; S08562; S07128; S08573; S08574
R/Whelan, S.M.; Elmore, M.J.; Bodsworth, N.J.; Brehm, J.K.; Atkinson, T.; Minton, N.P.
Appl. Environ. Microbiol. 58, 2345-2354, 1992
A/Title: Molecular cloning of the Clostridium botulinum structural gene encoding the ty
A/Reference number: A48940; MUID:92384550; PMID:1514783.
A/Accession: A48940
A/Status: preliminary
A/Molecule type: DNA
A/Molecule type: DNA
A/Residues: 1-1291 <WHE>
A/Cross-references: UNIPROT:P10844; UNIPARC:UPI000016EA76; GB:M81186; NID:g144734; PIDN:
A/Experimental source: type B, Danish
A/Note: sequence extracted from NCBI backbone (NCBIN:112080, NCBI:P:112081); this public
R/Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A/Title: Gene probes for identification of the botulin neurotoxin gene and specific i
A/Reference number: S48103; MUID:94013372; PMID:8408542
A/Accession: S48105
A/Status: preliminary
A/Molecule type: DNA
A/Residues: 634-994 <CAM>
A/Cross-references: UNIPARC:UPI000016EA78; EMBL:X70817; NID:9407782; PIDN:CAA50148.1; PI
A/Experimental source: proteolytic type B, strain NCTC 7273
R/Szabo, E.A.; Pemberton, J.M.; Desmarchelier, P.M.
submitted to the EMBL Data Library, April 1992
A/Description: Partial amino acid sequence of botulinum neurotoxin type B and comparis
A/Reference number: S21575
A/Accession: S21575
A/Molecule type: DNA
A/Residues: 36-217, 'G', 219-224, 'S', 226-246 <SA>
A/Cross-references: UNIPARC:UPI000016EA79; EMBL:Z11934; NID:940383; PIDN:CAA77991.1; PI
R/Kurazono, H.; Mochida, S.; Binz, T.; Eiselt, U.; Quanz, M.; Grebenstein, O.; Wernars,
J. Biol. Chem. 267, 14721-14723, 1992
A/Title: Minimal essential domains specifying toxicity of the light chains of tetanus t
A/Reference number: A42871; MUID:92340509; PMID:1634516
A/Accession: A42871
A/Status: nucleic acid sequence not shown
A/Molecule type: mRNA
A/Residues: 1-313, 'S', 315-451 <KUR>
A/Cross-references: UNIPARC:UPI000000B3742
A/Experimental source: strain Okra
A/Note: sequence extracted from NCBI backbone (NCBI:P:109365)
R/DasGupta, B.R.; Datta, A.
Biochimie 70, 811-817, 1988
A/Title: Botulinum neurotoxin type B (strain 657): partial sequence and similarity with
A/Reference number: S07155; MUID:89000987; PMID:3139097
A/Accession: S07155
A/Molecule type: protein
A/Residues: 2-29, 'M', 31-45 <DAS>

A;Cross-references: UNIPARC:UPI0000173650
A;Accession: S08562
A;Molecule type: protein
A;Residues: 442-463, R', 465-467 <DA2>
A;Cross-references: UNIPARC:UPI0000173650
R;Schmidt, J.J.; Sathyamoorthy, V.; DasGupta, B.R.
Arch. Biochem. Biophys. 238, 544-548, 1985
A;Title: Partial amino acid sequences of botulinum neurotoxins types B and E.
A;Reference number: S07128; MUID:85197963; PMID:3898113
A;Accession: S07128
A;Status: preliminary
A;Molecule type: protein
A;Residues: 2-16 <SCH1>
A;Cross-references: UNIPARC:UPI0000173652
A;Accession: S08573
A;Status: preliminary
A;Molecule type: protein
A;Residues: 2-17 <SCH2>
A;Cross-references: UNIPARC:UPI0000173652
A;Accession: S08574
A;Status: preliminary
A;Molecule type: protein
A;Residues: 442-459 <SCH3>
A;Cross-references: UNIPARC:UPI0000173652
R;Schiavo, G.; Benfenati, F.; Poullain, B.; Rossetto, O.; de Laureto, P.P.; DasGupta, B.R.
Nature 359, 832-835, 1992
A;Title: Tetanus and botulinum-B neurotoxins block neurotransmitter release by proteolytic
A;Reference number: S27125; MUID:93063293; PMID:1331807
A;Comments: annotation
A;Content: Botulinum neurotoxins inhibit neurotransmitter release from cholinergic synap
C;Genetics:
A;Gene: bont/b
C;Function:
A;Description: catalyzes hydrolysis of a Gln-Phe peptide bond in synaptobrevin 2
C;Superfamily: tetanus toxin
C;Keywords: metalloproteinase; neurotoxin; transmembrane protein; zinc
F;2-441/Product: botoxilysin B light chain #status experimental <LGHT>
F;442-1391/Product: botoxilysin B heavy chain #status experimental <HV>
F;230,234/Binding site: zinc (His) #status predicted
F;231/Active site: Glu #status predicted

Query Match 37.4%; Score 284.5; DB 1; Length 1291;
Best Local Similarity 39.3%; Pred. No. 1.2e-17;
Matches 59; Conservative 27; Mismatches 45; Indels 19; Gaps 4;
QY 2 FNYTOMISDYSYINKWIFVFTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKIV 61
DB 987 FEYNIREDISYINRWFFVFTINN-LNNAKIYINGKLESNTDKIDREVIANGIEIIFKLD 1045
QY 62 GCND-TRVGYRKYFKVDFTELKTEIETLYSDPEPSILKDFWGNLYLNKRYLLNLL-- 118
DB 1046 GDIDRTQITWKKYFIFNTLQSQSIERYKIQSYEYLKDFWGNPLMYNKEYYMFPNAGN 1105
QY 119 -----LRTDKSI-----TQNSNPLN 133
DB 1106 KNSYIKLKKDPSVGEILTRSKYNQNSKYIN 1135
RESULT 10
S11455
botulinum neurotoxin type D - Clostridium botulinum
C;Species: Clostridium botulinum
C;Date: 18-Feb-1994 #sequence_revision 10-Nov-1995 #text_change 09-Jul-2004
C;Accession: S11455
R;Binz, T.; Kurazono, H.; Popoff, M.R.; Eklund, M.W.; Sakaguchi, G.; Kozaki, S.; Kriegl
Nucleic Acids Res. 18, 5556, 1990
A;Title: Nucleotide sequence of the gene encoding Clostridium botulinum neurotoxin type
A;Reference number: S11455; MUID:91016853; PMID:2216736
A;Accession: S11455
A;Status: preliminary
A;Molecule type: protein
A;Residues: 1-1276 <BIN>
A;Cross-references: UNIPROT:P19321; UNIPARC:UPI0000126B83; EMBL:X54254; NID:G40395; PIDN

C;Superfamily: tetanus toxin
C;Keywords: neurotoxin

Query Match 32.3%; Score 245.5; DB 2; Length 1276;
Best Local Similarity 35.0%; Pred. No. 4.2e-14;
Matches 48; Conservative 33; Mismatches 55; Indels 1; Gaps 1;

QY 1 VFNYTOMISDYSYINKWIFVFTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
DB 986 IFDYSLSHTGYTNKWFVFTITNNINGMKLYINGELKQSKQIEDLDEVKLDKTIIVFGI 1045

QY 61 -VGCNDRYGVIRYFKVDFTELKTEIETLYSDPEPSILKDFWGNLYLNKRYLLNLL 119
DB 1046 DENIDENQMLWIRDNIFSKELSNEDINIVYEGILNRVINDYGNPLKDFTEYIIINDN 1105

QY 120 RTDKSITQNSNPLN 136

DB 1106 YIDRYIAPESNVLVLVQ 1122

RESULT 11

BTCLTN

tentoxilysin (EC 3.4.24.68) precursor - Clostridium tetani

N;Alternate names: tetanus neurotoxin

C;Species: Clostridium tetani

C;Date: 31-Mar-1988 #sequence_revision 31-Mar-1988 #text_change 09-Jul-2004

C;Accession: A25689; A25757; A25194; B25194; A60759; S69348; S09364

R;Eisel, U.; Jarausch, W.; Goretzki, K.; Henschen, A.; Engels, J.; Weller, U.; Hudel, M.

EMBO J. 5, 2495-2502, 1986

A;Title: Tetanus toxin: primary structure, expression in E. coli, and homology with botu

A;Reference number: A25689; MUID:87053814; PMID:3536478

A;Accession: A25689

A;Molecule type: DNA

A;Residues: 1-1315 <EIS>

A;Cross-references: UNIPROT:P04958; UNIPARC:UPI000003617E; GB:X04436; NID:G40769; PIDN:

R;Fairweather, N.F.; Lyness, V.A.

Nucleic Acids Res. 14, 7809-7812, 1986

A;Title: The complete nucleotide sequence of tetanus toxin.

A;Reference number: A25757; MUID:87040747; PMID:3774547

A;Accession: A25757

A;Molecule type: DNA

A;Residues: 1-1315 <FAI>

A;Cross-references: UNIPARC:UPI000003617E; GB:X06214; NID:G40773; PIDN:CAA29564.1; PID:

A;Experimental source: strain CN3911

R;Fairweather, N.F.; Lyness, V.A.; Pickard, D.J.; Allen, G.; Thomson, R.O.

J. Bacteriol. 165, 21-27, 1986

A;Title: Cloning, nucleotide sequencing, and expression of tetanus toxin fragment C in E

A;Reference number: A25194; MUID:86085672; PMID:3510187

A;Accession: A25194

A;Molecule type: DNA

A;Residues: 743-1315 <FA2>

A;Cross-references: UNIPARC:UPI0000156CFA; GB:M12739; NID:G144920; PIDN:AAA23282.1; PID

A;Accession: B25194

A;Molecule type: protein

A;Residues: 865-894 <FA3>

R;Matsuda, M.; Lei, D.L.; Sugimoto, N.; Ozutsumi, K.; Okabe, T.

Infect. Immun. 57, 3588-3593, 1989

A;Title: Isolation, purification, and characterization of fragment B, the NH-2-terminal

A;Reference number: A60759; MUID:90035436; PMID:2478476

A;Accession: A60759

A;Molecule type: protein

A;Residues: 461-475 <WAT>

A;Cross-references: UNIPARC:UPI000017364E

R;Demotz, S.; Lanzavecchia, L.; Eisel, U.; Niemann, H.; Widmann, C.; Corradin, G.

J. Immunol. 142, 394-402, 1989

A;Title: Delineation of several DR-restricted tetanus toxin T cell epitopes.

A;Reference number: J50098; MUID:89093918; PMID:2463305

A;Contents: annotation; epitope region

R;Schiavo, G.; Benfenati, F.; Poullain, B.; Rossetto, O.; de Laureto, P.P.; DasGupta, B.

Nature 359, 832-835, 1992

A;Title: Tetanus and botulinum-B neurotoxins block neurotransmitter release by proteolytic

A;Reference number: S27125; MUID:93063293; PMID:1331807

A:Description: blocks neuroexocytosis via hydrolysis of a Gln-Phe peptide bond in synaptobrevin.
 C:Superfamily: tetanus toxin.
 C:Keywords: hydrolase; metalloproteinase; neurotoxin; transmembrane protein; zinc.
 F:2-457/Product: tetroxylalysine light chain (fragment A) #status predicted <TTL>
 F:461-1315/Product: tetroxylalysine heavy chain (fragment B.C) #status experimental <TTH>
 F:461-864/Domain: channel forming (fragment B) #status predicted <TXD>
 F:865-1315/Domain: ganglioside binding (fragment C) #status predicted <TXC>
 F:233,237/Binding site: zinc (His) #status predicted
 F:234/Active site: Glu #status predicted

Query Match	31.4%;	Score 239;	DB 2;	Length 1291;
Best Local Similarity	37.0%;	Pred. NO. 1.7e-13;		
Matches	54;	Conservative 25;	Mismatches 57;	Indels 10; Gaps 2;
QY	2	FNYTQWISDSYINKWIFVYTTNNPLGNSRYIYNGNLINIDKESISNLGDIHVSNDILFKIV	61	
DB	993	FSYDSINNAPGY-NKWFVFTYTNMMGNMKYIYNGKLDTTKVKBELTGINFSKTTTPEIN	1051	
QY	62	GCNDTRYV-----GIRYFKVPDTELGKTELETLSDEPDPSILKDPGNVYLLYNKR	112	
DB	1052	KIPDTGLTSDSDNINMWIRDFYFAKELDGKDNILFNSLOYTNVWADYMGNDLRYNKE	1111	
QY	113	YLLNLLRTDKSITQNSFLNINQOR	138	
DB	1112	YVMYNDIYINRYMYANSRQIVENTRR	1137	

RESULT 13
S46431
botulinum neurotoxin C1 - Clostridium botulinum phage 1C (strain C 468)
N/Alternate names: BoNT/C1 protein
C/Species: Clostridium botulinum phage 1C
A/Variety: strain C 468
C/Date: 19-Mar-1997 #sequence_revision 06-Jun-1997 #text_change 09-Jul-2004
C/Accession: S46431; S49107
Eklund, M.W.; Boquet, P.; Popoff, M.R.
J. Gen. Genet. 243, 631-640, 1994
A/R/Article: Organization of the botulinum neurotoxin C1 gene and its associated non-toxic protein
A/Reference number: S46426; MUID:94301293; PMID:8028579

[illegible]

RESULT 14
/70582
botulinum neurotoxin type Dsa precursor - Clostridium botulinum phage d-sA
;Species: Clostridium botulinum phage d-sA
;Note: Host Clostridium botulinum type D (strain South Africa)
;Date: 19-Mar-1997 #sequence_revision 19-Mar-1997 #text_change 20-Jun-2000
;Accession: S70582

Job time : 14.0278 secs

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RC STRAIN=Type F / Hobbs FT10;
 RX MEDLINE=94297488; PubMed=7764998;
 RA East A.K., Collins M.D.;
 RT "Conserved structure of genes encoding components of botulinum
 RT neurotoxin complex M and the sequence of the gene coding for the
 RT nontoxic component in nonproteolytic Clostridium botulinum type F.";
 RL Curr. Microbiol. 29:69-77(1994).
 RN [3]
 RP NUCLEOTIDE SEQUENCE OF 634-1002.
 RX MEDLINE=94013372; PubMed=8408542;
 RA Campbell K.D., Collins M.D., East A.K.;
 RT "Gene probes for identification of the botulinum neurotoxin gene and
 RT specific identification of neurotoxin types B, E, and F.";
 RL J. Clin. Microbiol. 31:2255-2262(1993).
 RN [4]
 RP IDENTIFICATION OF SUBSTRATES.
 RX MEDLINE=94230352; PubMed=8175689;
 RA Yamasaki S., Baumeister A., Binz T., Blasi J., Link E., Cornille F.,
 RA Roques B., Fykse E.M., Suedhof T.C., Jahn R., Niemann H.;
 RT "Cleavage of members of the synaptobrevin/VAMP family by types D and F
 RT botulinum neurotoxins and tetanus toxin.";
 RL J. Biol. Chem. 269:12764-12772(1994).
 CC -!- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
 CC release. It binds to peripheral neuronal synapses, is internalized
 CC and moves by retrograde transport up the axon into the spinal cord
 CC where it can move between postsynaptic and presynaptic neurons. It
 CC inhibits neurotransmitter release by acting as a zinc
 CC endopeptidase that catalyzes the hydrolysis of the S8-Gln-Lys-59
 CC bond of synaptobrevins-1 and -2.
 CC -!- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
 CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
 CC detected action on small molecule substrates.
 CC -!- COFACTOR: Binds 1 zinc ion per subunit (By similarity).
 CC -!- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
 CC heavy chain (H). The light chain has the pharmacological activity,
 CC while the N- and C-terminal of the heavy chain mediate channel
 CC formation and toxin binding, respectively.
 CC -!- SUBCELLULAR LOCATION: Secreted.
 CC -!- MISCELLANEOUS: There are seven antigenically distinct forms of
 CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
 CC -!- SIMILARITY: Belongs to the peptidase M27 family.
 CC
 CC This Swiss-Prot entry is copyright. It is produced through a collaboration
 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use as long as its content is in no way modified and this statement is not
 CC removed.

DR EMBL; M92306; AAA23263.1; -; Genomic DNA.
 DR EMBL; S73676; AAC60475.1; -; Genomic DNA.
 DR EMBL; X70820; CAA50151.1; -; Genomic DNA.
 DR EMBL; X70816; CAA50147.1; -; Genomic DNA.
 DR PIR; I40813; I40813.
 DR PIR; S48109; S48109.
 DR HSSP; Q45894; LEIH.
 DR MEROPS; M27.002; -;
 DR InterPro; IPR011591; Botulinum.
 DR InterPro; IPR006025; Pept M Zn BS.
 DR InterPro; IPR000395; Peptidase M27.
 DR InterPro; IPR012928; Toxin recpt_bd_N.
 DR InterPro; IPR012500; Toxin_trans.
 DR Pfam; PF01742; Peptidase M27; 1.
 DR Pfam; PF07953; Toxin R bind N; 1.
 DR Pfam; PF07952; Toxin trans; 1.
 DR PRINTS; PR00760; BONTOXILYSIN.
 DR PRODOM; PD001963; Botulinum; 1.
 DR PROSITE; PS00142; ZINC_PROTEASE; 1.
 KW Hydrolase; Metal-binding; Metalloprotease; Neurotoxin; Protease;
 KW Toxin; Transmembrane; Zinc.
 FT CHAIN 1 436 Botulinum neurotoxin F light chain.
 FT CHAIN 437 1274 Botulinum neurotoxin F heavy chain.
 FT ACT SITE 228 228 By similarity.
 FT METAL 227 227 Zinc (catalytic) (By similarity).

FT METAL 231 231 Zinc (catalytic) (By similarity).
 FT DISULFID 429 445 Interchain (between light and heavy chains) (Probable).
 SQ SEQUENCE 1274 AA; 146710 MW; 5B99756A7438B921 CRC64;
 Query Match 80.4%; Score 612; DB 1; Length 1274;
 Best Local Similarity 82.9%; Pred. No. 4.5e-47;
 Matches 116; Conservative 10; Mismatches 14; Indels 0; Gaps 0;
 Qy 1 VENTOMISISDYINKWIFVTITNRLGNSRIYINGNLIDKESISNIGDIHVSNDILFKI 60
 Db 994 IFRYEELRLSNVINKWIFVTITNRLGNSRIYINGNLIVKESISNIGDIHVSNDILFKI 1053
 Qy 61 VGCNDTRYGIRYFKVFDTELKTEIETLSDEPDPSILKDFWGNLYLLKRYLLNLLR 120
 Db 1054 VGCDDETVGIRYFKVFDTELKTEIETLSDEPDPSILKDFWGNLYLLKRYLLNLLR 1113
 Qy 121 TDKSITQNSPLNINQORGV 140
 Db 1114 KDKYITLNSGILNINQORGV 1133
 RESULT 5
 EXE_CLOBO
 ID BXE CLOBO STANDARD; PRT; 1250 AA.
 AC Q00496; Q45862;
 DT 01-JUL-1993 (Rel. 26, Created)
 DT 01-JUL-1993 (Rel. 26, Last sequence update)
 DT 13-SEP-2005 (Rel. 48, Last annotation update)
 DE Botulinum neurotoxin type E precursor (EC 3.4.24.69) (BONT/E)
 DE (Bontoxilysin E) [Contains: Botulinum neurotoxin E light chain;
 DE Botulinum neurotoxin E heavy chain].
 OS Clostridium botulinum.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.
 OX NCBI_TaxID=1491;
 RN [1]
 RP NUCLEOTIDE SEQUENCE.
 RC STRAIN=Type E / Beluga;
 RX MEDLINE=92181428; PubMed=1543481;
 RA Poulet S., Hauser D., Quanz M., Niemann H., Popoff M.R.;
 RT "Sequences of the botulin neurotoxin E derived from Clostridium
 RT botulinum type E (strain Beluga) and Clostridium butyricum (strains
 RT ATCC 43181 and ATCC 43755).";
 RL Biochem. Biophys. Res. Commun. 183:107-113(1992).
 RN [2]
 RP NUCLEOTIDE SEQUENCE.
 RX MEDLINE=92174922; PubMed=1541280;
 RA Whelan S.M., Elmore M.J., Bodsworth N.J., Atkinson T., Minton N.P.;
 RT "The complete amino acid sequence of the Clostridium botulinum type-E
 RT neurotoxin, derived by nucleotide-sequence analysis of the encoding
 RT gene.";
 RL Eur. J. Biochem. 204:657-667(1992).
 RN [3]
 RP NUCLEOTIDE SEQUENCE OF 1-251.
 RX MEDLINE=90264400; PubMed=2160960;
 RA Binz T., Kurazono H., Wille M., Frevert J., Wernars K., Niemann H.;
 RT "The complete sequence of botulinum neurotoxin type A and comparison
 RT with other clostridial neurotoxins.";
 RL J. Biol. Chem. 265:9153-9158(1990).
 RN [4]
 RP PROTEIN SEQUENCE OF 1-13.
 RX MEDLINE=85197963; PubMed=3888113;
 RA Schmidt J.J., Sathyaamoorthy V., Dasgupta B.R.;
 RT "Partial amino acid sequences of botulinum neurotoxins types B and
 RT E.";
 RL Arch. Biochem. Biophys. 238:544-548(1985).
 RN [5]
 RP PROTEIN SEQUENCE OF 419-426.
 RX MEDLINE=90344918; PubMed=2116911; DOI=10.1016/0300-9084(90)90075-R;
 RA Gimenez J.A., Dasgupta B.R.;
 RT "Botulinum neurotoxin type E fragmented with endoproteinase Lys-C
 RT reveals the site trypsin nicks and homology with tetanus neurotoxin.";

Biochimie 72:213-217(1990).
 [6] NUCLEOTIDE SEQUENCE OF 615-981.
 RC STRAIN=Type E / Hazen 36208;
 RA MEDLINE=94013372; PubMed=8408542;
 RX Campbell K.D., Collins M.D., East A.K.,
 RT "Gene probes for identification of the botulinum neurotoxin gene and
 RT specific identification of neurotoxin types B, E, and F.";
 RL J. Clin. Microbiol. 31:2255-2262(1993).
 [7] IDENTIFICATION OF SUBSTRATE.
 RP MEDLINE=94063091; PubMed=8243676; DOI=10.1016/0014-5793(93)80448-4;
 RX Schiavo G., Santucci A., Dasgupta B.R., Mehta P.P., Jontes J.,
 RA Benfenati F., Wilson M.C., Montecucco C.,
 RT "Botulinum neurotoxins serotypes A and E cleave SNAP-25 at distinct
 RT COOH-terminal peptide bonds.";
 RL FEBS Lett. 335:99-103(1993).
 [8] IDENTIFICATION OF SUBSTRATE.
 RP MEDLINE=94124495; PubMed=8294407;
 RX Binz T., Blas J., Yamasaki S., Baumeister A., Link E., Suedhof T.C.,
 RA Jahn R., Niemann H.,
 RT "Proteolysis of SNAP-25 by types E and A botulinum neurotoxins.";
 RL J. Biol. Chem. 269:1617-1620(1994).
 CC -|- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
 CC release. It binds to peripheral neuronal synapses, is internalized
 CC and moves by retrograde transport up the axon into the spinal cord
 CC where it can move between postsynaptic and presynaptic neurons. It
 CC inhibits neurotransmitter release by acting as a zinc
 CC endopeptidase that catalyzes the hydrolysis of the 180-Arg-Ile-
 CC 181 bond in SNAP-25.
 CC -|- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
 CC neurocytosol apparatus, synaptobrevins, SNAP25 or syntaxin. No
 CC detected action on small molecule substrates.
 CC -|- COFACTOR: Binds 1 zinc ion per subunit (By similarity).
 CC -|- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
 CC heavy chain (H). The light chain has the pharmacological activity,
 CC while the N- and C-terminal of the heavy chain mediate channel
 CC formation and toxin binding, respectively.
 CC -|- SUBCELLULAR LOCATION: Secreted.
 CC -|- MISCELLANEOUS: There are seven antigenically distinct forms of
 CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
 CC -|- SIMILARITY: Belongs to the peptidase M27 family.

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 CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
 CC the European Bioinformatics Institute. There are no restrictions on its
 CC use as long as its content is in no way modified and this statement is not
 CC removed.

 CC EMBL; X62089; CAA43999.1; -; Genomic DNA.
 DR EMBL; X62683; CAA44558.1; -; Genomic DNA.
 DR EMBL; X70815; CAA50146.1; -; Genomic DNA.
 DR PIR; S08575; S08575.
 DR PIR; S21178; S21178.
 DR PDB; 1T3A; X-ray; A/B=1-421.
 DR PDB; 1T3C; X-ray; A/B=1-421.
 DR MEROPS; M27.002; -.
 DR InterPro; IPR011591; Botulinum.
 DR InterPro; IPR006025; Peptidase_M27.
 DR InterPro; IPR000395; Peptidase_M27.
 DR InterPro; IPR012928; Toxin_recept_bd_N.
 DR InterPro; IPR012500; Toxin_trans.
 DR Pfam; PF01742; Peptidase_M27; 1.
 DR Pfam; PF07953; Toxin_R_bind_N; 1.
 DR Pfam; PF07952; Toxin_trans; 1.
 DR PRINTS; PR00760; BONTOTILYSIN.
 DR PRODOM; PD001963; Botulinum; 1.
 DR PROSITE; PS00142; ZINC_PROTEASE; 1.
 KW 3D-structure; Direct protein sequencing; Hydrolase; Metal-binding;
 KW Metalloprotease; Neurotoxin; Protease; Toxin; Transmembrane; Zinc.
 FT INIT MET 0 421 Botulinum neurotoxin E light chain.

FT CHAIN 422 1250 Botulinum neurotoxin E heavy chain.
 FT ACT_SITE 212 212 By similarity.
 FT METAL 211 211 Zinc (catalytic) (By similarity).
 FT METAL 215 215 Zinc (catalytic) (By similarity).
 FT DISULFID 411 425 Interchain (between light and heavy chains) (Probable).
 FT CONFLICT 176 176 R -> G (in Ref. 2).
 FT CONFLICT 197 197 C -> S (in Ref. 2 and 3).
 FT CONFLICT 339 339 R -> A (in Ref. 2).
 FT CONFLICT 772 772 I -> L (in Ref. 2 and 6).
 FT CONFLICT 962 963 FE -> LQ (in Ref. 2 and 6).
 FT CONFLICT 966 966 R -> A (in Ref. 2 and 6).
 FT CONFLICT 1194 1194 N -> NN (in Ref. 2).
 SQ SEQUENCE 1250 AA; 143713 MW; D9FCF26DDA041EB4 CRC64;
 Query Match 65.4%; Score 497.5; DB 1; Length 1250;
 Best Local Similarity 68.1%; Pred. No. 1.4e-36;
 Matches 94; Conservative 21; Mismatches 22; Indels 1; Gaps 1;
 QY 2 FNTQMISISDYINKWIFVTITNNLGNRIYINGNLIDEKISINLGDHVSNDILPKIV 61
 DB 974 FNYGNANGISDYINKWIFVTITNNLGNRIYINGNLIDQKSLNIGNHVSNDILPKIV 1033
 QY 62 GCNDTRYVGIRYKVFDTLGTETLYSDEPDPSILKDFWGNLYLLNRYLLNLR 121
 DB 1034 NCSYTRYGIRYFNIFDKDELDETEIQLYSNEPNTNLKDFWGNLYLLNRYLLNLR 1093
 QY 122 DKSI-TQNSNPLNINQOR 138
 DB 1094 NNFIDRRKSTLSINNIR 1111
 RESULT 6
 Q54A79 CLOBO
 ID Q54A79 CLOBO PRELIMINARY; PRT; 1252 AA.
 AC Q54A79;
 DT 13-SEP-2005 (T-EMBLrel. 31, Created)
 DT 13-SEP-2005 (T-EMBLrel. 31, Last sequence update)
 DT 13-SEP-2005 (T-EMBLrel. 31, Last annotation update)
 DE Botulinum neurotoxin type E.
 GN Namesbont/E;
 OS Clostridium botulinum.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.
 OX NCBI_TaxID=1491;
 RN [1]
 RP NUCLEOTIDE SEQUENCE.
 RC STRAIN=35396;
 RA Takamoto K., Mukamoto M., Kohda T., Ihara H., Wang X., Maegawa T.,
 RA Nakamura S., Karasawa T., Kozaki S.;
 RT "Sequence of the botulinum neurotoxin type E.";
 RL Submitted (MAR-2002) to the EMBL/GenBank/DBJ databases.
 DR EMBL; AB082519; BAB86845.1; -; Genomic_DNA.
 KW Neurotoxin.
 SQ SEQUENCE 1252 AA; 143637 MW; 76401D4D2E95D7A2 CRC64;
 Query Match 65.4%; Score 497.5; DB 2; Length 1252;
 Best Local Similarity 68.1%; Pred. No. 1.4e-36;
 Matches 94; Conservative 21; Mismatches 22; Indels 1; Gaps 1;
 QY 2 FNTQMISISDYINKWIFVTITNNLGNRIYINGNLIDEKISINLGDHVSNDILPKIV 61
 DB 975 FNYGNANGISDYINKWIFVTITNNLGNRIYINGNLIDQKSLNIGNHVSNDILPKIV 1034
 QY 62 GCNDTRYVGIRYKVFDTLGTETLYSDEPDPSILKDFWGNLYLLNRYLLNLR 121
 DB 1035 NCSYTRYGIRYFNIFDKDELDETEIQLYSNEPNTNLKDFWGNLYLLNRYLLNLR 1094
 QY 122 DKSI-TQNSNPLNINQOR 138
 DB 1095 NNFIDRRKSTLSINNIR 1112

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RESULT 7
BXE_CLOBU
ID -BXE_CLOBU STANDARD; PRT; 1250 AA.
AC P30995;
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type E precursor (EC 3.4.24.69) (BONT/E)
DE Botulinum neurotoxin E (Contains: Botulinum neurotoxin E light chain;
DE Botulinum neurotoxin E heavy chain)
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=ATCC 43181, and ATCC 43755;
RX MEDLINE=92181428; PubMed=1543481;
RA Poulet S., Hauser D., Quanz M., Niemann H., Popoff M.R.;
RT "Sequences of the botulinum neurotoxin E derived from Clostridium
RT botulinum type E (strain Beluga) and Clostridium butyricum (strains
RT ATCC 43181 and ATCC 43755).";
RL Biochem. Biophys. Res. Commun. 183:107-113(1992).
RN [2]
RP NUCLEOTIDE SEQUENCE OF 1-251.
RC STRAIN=BL6340;
RX MEDLINE=91237316; PubMed=203376;
RA Fujii N., Kimura K., Murakami T., Indoh T., Tsuzuki K., Yokosawa N.,
RA Yashiki T., Oguma K.;
RT "Cloning of a DNA fragment encoding the 5'-terminus of the botulinum
RT type E toxin gene from Clostridium butyricum strain BL6340.";
RL J. Gen. Microbiol. 137:519-525(1991).
RN [3]
RP PROTEIN SEQUENCE OF 1-48.
RC STRAIN=5262;
RA Gimenez J., Roley J., Dasgupta B.R.;
RT "Neurotoxin type E from Clostridium botulinum and C. butyricum;
RT partial sequence and comparison.";
RL FASEB J. 2:A1750-A1750(1988).
CC -!- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
CC release. It binds to peripheral neuronal synapses, is internalized
CC and moves by retrograde transport up the axon into the spinal cord
CC where it can move between postsynaptic and presynaptic neurons. It
CC inhibits neurotransmitter release by acting as a zinc
CC endopeptidase.
CC -!- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -!- COFACTOR: Binds 1 zinc ion per subunit (By similarity).
CC -!- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H). The light chain has the pharmacological activity,
CC while the N- and C-terminal of the heavy chain mediate channel
CC formation and toxin binding, respectively.
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: types A, B, C1, D, E, F, and G.
CC -!- SIMILARITY: Belongs to the peptidase M27 family.
CC
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CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.
CC
CC EMBL; X62088; CAA33998.1; -; Genomic DNA.
CC EMBL; X53180; CAA37321.1; -; Genomic DNA.
CC FIR; JH0256; JH0256.
CC HSSP; Q45894; 1E1H.
CC SMR; P30995; 1-411.
CC MEROPS; M27.002; -.
CC InterPro; IPR011591; Botulinum.
CC InterPro; IPR006025; Pept_M_Zn_BS.
CC InterPro; IPR000395; Peptidase_M27.

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DR InterPro; IPR012928; Toxin_recept_bd_N.
DR InterPro; IPR012500; Toxin_trans.
DR Pfam; PF01742; Peptidase_M27; 1.
DR Pfam; PF07953; Toxin_R_bind_N; 1.
DR Pfam; PF07952; Toxin_trans; 1.
DR PRINTS; PD00760; BONTOKILYSIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; 1.
KW Direct protein sequencing; Hydrolase; Metal-binding; Metalloprotease;
KW Neurotoxin; Protease; Toxin; Transmembrane; Zinc.
FT INIT_MET 0
FT CHAIN 1 421 Botulinum neurotoxin E light chain.
FT CHAIN 422 1250 Botulinum neurotoxin E heavy chain.
FT ACT_SITE 212 212 By similarity.
FT METAL 211 211 Zinc (catalytic) (By similarity).
FT METAL 215 215 Zinc (catalytic) (By similarity).
FT DISULFID 411 425 Interchain (between light and heavy
FT CONFLICT 229 229 Chains) (Probable).
FT SEQUENCE 1250 AA; 143266 MW; 8171B5B2C2312857 CRC64;
Query Match 65.1%; Score 495.5; DB 1; Length 1250;
Best Local Similarity 67.4%; Pred.No. 2.1e-36;
Matches 93; Conservative 23; Mismatches 21; Indels 1; Gaps 1;
QY 2 FNYQMISIDSYINKWIFVTITNNLGNRSIYINGNLIDKSIISNLGDIHVSDNLFKIV 61
DB 974 FNYGNANGISDYINKWIFVTITNDRLGSKLYINGNLIDKSIISNLGDIHVSDNLFKIV 1033
QY 62 GCDNTRYVGIRYKVFOTELGKTEIETLYSDPPSILKDFWGNLYLKNKYLLNLR 121
DB 1034 NCSYTRYGIRYKVFOTELGKTEIETLYSDPPSILKDFWGNLYLKNKYLLNLR 1093
QY 122 DKSITQNS-NFLNINQOR 138
DB 1094 NNFNRTDTSLTINNIR 1111
RESULT 8
Q8KZM3_CLOBU.
ID Q8KZM3_CLOBU PRELIMINARY; PRT; 1252 AA.
AC Q8KZM3;
DT 01-OCT-2002 (TREMBLrel. 22, Created)
DT 01-OCT-2002 (TREMBLrel. 22, Last sequence update)
DT 01-MAR-2004 (TREMBLrel. 26, Last annotation update)
DE Type E botulinum toxin.
GN Name=bot/E;
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=BL 5262;
RA Tsukamoto K., Mukamoto M., Kohda T., Ihara H., Wang X., Maegawa T.,
RA Nakamura S., Katasawa T., Kozaki S.;
RL Submitted (JUL-2002) to the EMBL/GenBank/DBJ databases.
DR EMBL; AB088207; BAC05434.1; -; Genomic DNA.
DR HSSP; Q45894; 1E1H.
DR SMR; Q8KZM3; 2-412.
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; F: pathogenesis; IEA.
DR GO; GO:0006508; F: proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR00395; Peptidase_M27.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR Pfam; PF01742; Peptidase_M27; 1.
DR PRINTS; PR00760; BONTOKILYSIN.
DR PRODOM; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
DR SEQUENCE 1252 AA; 143510 MW; 41B633BE744D3B41 CRC64;
SQ

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AC P10845; P01561; P18639;
DT 01-JUL-1989 (Rel. 11, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type A precursor (EC 3.4.24.69) (BONT/A)
DE (Bontoxigen A) (BOTOX) [Contains: Botulinum neurotoxin A light-chain; Botulinum neurotoxin A heavy-chain]
GN Name: botA; Synonyms: atx, bna;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RN NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / NCTC 2916;
RC MEDLINE=90235864; PubMed=2185020;
RA Thompson D.E., Brehm J.K., Oultram J.D., Swinfield T.-J., Shone C.C.,
RA Atkinson T., Melling J., Minton N.P.;
RT "The complete amino acid sequence of the Clostridium botulinum type A
RT neurotoxin, deduced by nucleotide sequence analysis of the encoding
RT gene.";
RL Eur. J. Biochem. 189:73-81(1990).
RN [2]
RN NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / 62A;
RC MEDLINE=90264400; PubMed=2160960;
RA Binz T., Kurazono H., Wille M., Frevert J., Wernars K., Niemann H.;
RT "The complete sequence of botulinum neurotoxin type A and comparison
RT with other clostridial neurotoxins.";
RL J. Biol. Chem. 265:9153-9158(1990).
RN [3]
RN NUCLEOTIDE SEQUENCE OF 1-65.
RC STRAIN=Type A / 62A;
RC MEDLINE=97016817; PubMed=8863443;
RA East A.K., Bhandari M., Stacey J.M., Campbell K.D., Collins M.D.;
RT "Organization and phylogenetic interrelationships of genes encoding
RT components of the botulinum toxin complex in proteolytic Clostridium
RT botulinum types A, B, and F: evidence of chimeric sequences in the
RT gene encoding the nontoxic nonhemagglutinin component.";
RL Int. J. Syst. Bacteriol. 46:1105-1112(1996).
RN [4]
RN NUCLEOTIDE SEQUENCE OF 1-34.
RC STRAIN=Type A / Hall;
RC MEDLINE=89350959; PubMed=2669749;
RA Betley M.J., Somers E., Dasgupta B.R.;
RT "Characterization of botulinum type A neurotoxin gene: delineation of
RT the N-terminal encoding region.";
RL Biochem. Biophys. Res. Commun. 162:1388-1395(1989).
RN [5]
RN NUCLEOTIDE SEQUENCE OF 1-18.
RC STRAIN=Type A / NIH;
RC MEDLINE=96096783; PubMed=8521962; DOI=10.1016/0014-5793(95)01241-5;
RA Fujita R., Fujinaga Y., Inoue K., Nakajima H., Kumon H., Oguma K.;
RT "Molecular characterization of two forms of nontoxic-nonhemagglutinin
RT components of Clostridium botulinum type A progenitor toxins.";
RL FEBS Lett. 376:41-44(1995).
RN [6]
RN PROTEIN SEQUENCE OF 1-16.
RC MEDLINE=84178501; PubMed=6370252;
RA Schmidt J.J., Sartymoorthy V., Dasgupta B.R.;
RT "Partial amino acid sequence of the heavy and light chains of
RT botulinum neurotoxin type A.";
RL Biochem. Biophys. Res. Commun. 119:900-904(1984).
RN [7]
RN PROTEIN SEQUENCE OF 1-46.
RA Dasgupta B.R., Foley J., Niece R.;
RT "Partial sequence of the light chain of botulinum neurotoxin type A.";
RL Biochemistry 26:4162-4162(1987).
RN [8]
RN PROTEIN SEQUENCE OF 1-5 AND 444-456.
RX MEDLINE=91120847; PubMed=2126206; DOI=10.1016/0300-9084(90)90048-L;
RA Dasgupta B.R., Dekleva M.L.;
RT "Botulinum neurotoxin type A: sequence of amino acids at the N-

RT terminus and around the nicking site.";
RL Biochimie 72:661-664(1990).
RN [9]
RN PROTEIN SEQUENCE OF 448-474 AND 872-895.
RX MEDLINE=89024662; PubMed=3178218;
RA Sathymoorthy V., Dasgupta B.R., Foley J., Niece R.L.;
RT "Botulinum neurotoxin type A: Cleavage of the heavy chain into two
RT halves and their partial sequences.";
RL Arch. Biochem. Biophys. 266:142-151(1988).
RN [10]
RN PROTEIN SEQUENCE OF 448-482.
RX MEDLINE=85285016; PubMed=3896784;
RA Shone C.C., Hambleton P., Melling J.;
RT "Inactivation of Clostridium botulinum type A neurotoxin by trypsin
RT and purification of two tryptic fragments. Proteolytic action near the
RT COOH-terminus of the heavy subunit destroys toxin-binding activity.";
RL Eur. J. Biochem. 151:75-82(1985).
RN [11]
RN PROTEIN SEQUENCE OF 866-879 AND 1147-1218.
RX PubMed=8397793;
RA Gimenez J.A., Dasgupta B.R.;
RT "Botulinum type A neurotoxin digested with pepsin yields 132, 97, 72,
RT 45, 42, and 18 kD fragments.";
RL J. Protein Chem. 12:351-363(1993).
RN [12]
RN IDENTIFICATION OF SUBSTRATE.
RX MEDLINE=94063091; PubMed=8243676; DOI=10.1016/0014-5793(93)80448-4;
RA Schiavo G., Santucci A., Dasgupta B.R., Mehta P.P., Jontes J.,
RA Benfenati F., Wilson M.C., Montecucco C.;
RT "Botulinum neurotoxins serotypes A and E cleave SNAP-25 at distinct
RT COOH-terminal peptide bonds.";
RL FEBS Lett. 335:99-103(1993).
RN [13]
RN IDENTIFICATION OF SUBSTRATE.
RX MEDLINE=94124495; PubMed=8294407;
RA Binz T., Blas J., Yamasaki S., Baumeister A., Link E., Suedhof T.C.,
RA Jahn R., Niemann H.;
RT "Proteolysis of SNAP-25 by types E and A botulin neurotoxins.";
RL J. Biol. Chem. 269:1617-1620(1994).
RN [14]
RN MUTAGENESIS OF GLU-261; PHE-265 AND TYR-365.
RX MEDLINE=21556941; PubMed=11700044; DOI=10.1006/bbrc.2001.5911;
RA Rigoni M., Caccin P., Johnson E.A., Montecucco C., Rossetto O.;
RT "Site-directed mutagenesis identifies active-site residues of the
RT light chain of botulinum neurotoxin type a.";
RL Biochem. Biophys. Res. Commun. 288:1231-1237(2001).
RN [15]
RN X-RAY CRYSTALLOGRAPHY (3.3 ANGSTROMS).
RX MEDLINE=98455071; PubMed=9783750;
RA Lacy D.B., Tepp W., Cohen A.C., Dasgupta B.R., Stevens R.C.;
RT "Crystal structure of botulinum neurotoxin type A and implications for
RT toxicity.";
RL Nat. Struct. Biol. 5:898-902(1998).
RN [16]
RN FUNCTION: Inhibits acetylcholine release. The botulinum toxin
RN binds with high affinity to peripheral neuronal presynaptic
RN membrane, is then internalized by receptor-mediated endocytosis.
RN The C-terminus of the heavy chain (H) is responsible for the
RN adherence of the toxin to the cell surface while the N-terminus
RN mediates transport of the light chain from the endocytic vesicle
RN to the cytosol. After translocation, the light chain (L)
RN hydrolyzes the 197-Gln-Arg-198 bond in SNAP-25, thereby blocking
RN neurotransmitter release. Inhibition of acetylcholine release
RN results in flaccid paralysis, with frequent heart or respiratory
RN failure.
RN [17]
RN CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
RN neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
RN detected on small molecule substrates.
RN [18]
RN COPOLYMER: Binds 1 zinc ion per subunit.
RN [19]
RN SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
RN heavy chain (H).
RN [20]
RN SUBCELLULAR LOCATION: Secreted.
RN [21]
RN PHARMACEUTICAL: Available under the name BOTOX (Allergan) for the
RN treatment of strabismus and blepharospasm associated with dystonia

[2]
 RN NUCLEOTIDE SEQUENCE OF 1-65.
 RC STRAIN=Type A / Kyoto-F;
 RX MEDLINE=97016817; PubMed=8863443;
 RA East A.K., Bhandari M., Stacey J.M., Campbell K.D., Collins M.D.;
 RT "Organization and phylogenetic interrelationships of genes encoding
 RT components of the botulinum toxin complex in proteolytic Clostridium
 RT botulinum types A, B, and F: evidence of chimeric sequences in the
 RT gene encoding the nontoxic nonhemagglutinin component.";
 RL Int. J. Syst. Bacteriol. 46:1105-1112(1996).
 CC -1- FUNCTION: Inhibits acetylcholine release. The botulinum toxin
 CC binds with high affinity to peripheral neuronal presynaptic
 CC membrane, is then internalized by receptor-mediated endocytosis.
 CC The C-terminus of the heavy chain (H) is responsible for the
 CC adherence of the toxin to the cell surface while the N-terminus
 CC mediates transport of the light chain from the endocytic vesicle
 CC to the cytosol. After translocation, the light chain (L)
 CC hydrolyzes the 197-Gln-Arg-198 bond in SNAP-25, thereby blocking
 CC neurotransmitter release. Inhibition of acetylcholine release
 CC results in flaccid paralysis, with frequent heart or respiratory
 CC failure (By similarity).
 CC -1- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
 CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
 CC detected action on small molecule substrates.
 CC -1- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
 CC heavy chain (H) (By similarity).
 CC -1- SUBCELLULAR LOCATION: Secreted.
 CC -1- MISCELLANEOUS: There are seven antigenically distinct forms of
 CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
 CC -1- SIMILARITY: Belongs to the peptidase M27 family.
 CC -----
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 CC removed.
 CC -----
 DR EMBL; X73423; CAA51824.1; -; Genomic_DNA.
 DR EMBL; X87974; CAA61234.1; -; Genomic_DNA.
 DR PIR; I40645; I40645.
 DR PDB; 1E1H; X-ray; A/C=9-249, B/D=250-415.
 DR MEROPS; M27.002; -.
 DR InterPro; IPR011591; Botulinum.
 DR InterPro; IPR006025; Pept_M_Zn_BS.
 DR InterPro; IPR000395; Peptidase M27.
 DR InterPro; IPR012928; Toxin recpt_bd_N.
 DR InterPro; IPR012500; Toxin trans.
 DR Pfam; PF01742; Peptidase M27; 1.
 DR Pfam; PF07953; Toxin_R_bind_N; 1.
 DR Pfam; PF07952; Toxin trans; 1.
 DR PRINTS; PR00760; BONTOKILYSIN.
 DR PRODOM; PD001963; Botulinum; 1.
 DR PROSITE; PS00142; ZINC_PROTEASE; FALSE NEG.
 KW 3D-structure: Hydroxylase, Metal-binding, Metalloprotease; Neurotoxin;
 KW Protease; Toxin; Transmembrane; Zinc.
 FT INIT MET 0 0 By similarity.
 FT CHAIN 1 447 Botulinum neurotoxin A light-chain.
 FT CHAIN 448 1295 Botulinum neurotoxin A heavy-chain.
 FT TRANSMEM 626 646 Potential.
 FT TRANSMEM 655 675 Potential.
 FT ACT_SITE 223 223 By similarity.
 FT METAL 222 222 Zinc (catalytic) (By similarity).
 FT METAL 226 226 Zinc (catalytic) (By similarity).
 FT DISULFID 429 453 Interchain (between light and heavy
 FT chains) (By similarity).
 FT DISULFID 1234 1279 By similarity.
 FT SEQUENCE 1295 AA; 149280 MW; 5DA04A13D98D6372 CRC64;
 Query Match 55.7%; Score 423.5; DB 1; Length 1295;
 Best Local Similarity 56.9%; Pred. No. 8.4e-30;
 Matches 82; Conservative 23; Mismatches 34; Indels 5; Gaps 2;
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Db 997 VFYKQWVNISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 1056
 QY 61 VGCND-TRYVGIRYKVFDTGLTETIETLYSDPDPSPILKDFWGNVLLYKRYLLMLL 119
 Db 1057 DGCRRPRYIMIKYFNLFDKELNEKEIKLDYDSQNSGILKDFWGNVLYQDKPYMLNLF 1116
 QY 120 RTDKSITQNSNLFNINQQRGVYQK 143
 Db 1117 DPNKYVDVN---NIGIRGYMYLK 1136
 RESULT 14
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 ID Q58GH1_CLOBO PRELIMINARY;
 AC Q58GH1;
 DT 10-MAY-2005 (TrEMBLrel. 30, Created)
 DT 10-MAY-2005 (TrEMBLrel. 30, Last sequence update)
 DT 10-MAY-2005 (TrEMBLrel. 30, Last annotation update)
 DE Type A2 botulinum neurotoxin.
 OS Clostridium botulinum.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.
 OX NCBI_TaxID=1491;
 RN [1]
 RC NUCLEOTIDE SEQUENCE.
 RP STRAIN=FRI-HIA2;
 RA Johnson E.A., Tepp W.H., Bradshaw M., Gilbert R.J., Cook P.E.,
 RA McIntosh E.D.G.;
 RT "Characterization of Clostridium botulinum Strains Associated with an
 RT Infant Botulism Case in the United Kingdom.";
 RL J. Clin. Microbiol. 0:0-0(2005).
 RN [2]
 RC NUCLEOTIDE SEQUENCE.
 RP STRAIN=FRI-HIA2;
 RA Smith T.J., Lou J., Geren I., Forsyth C., Tsai R., Tepp W.H.,
 RA Bradshaw M., Johnson E.A., Smith L.A., Marks J.D.;
 RT "Sequence variation within botulinum neurotoxin serotypes impacts
 RT antibody binding and neutralization.";
 RL Submitted (MAR-2005) to the EMBL/GenBank/DBJ databases.
 DR EMBL; AY953275; AAX53156.1; -; Genomic_DNA.
 KW Neurotoxin.
 SQ SEQUENCE 1296 AA; 149410 MW; 6F12E7BF28ED69D1 CRC64;
 Query Match 55.7%; Score 423.5; DB 2; Length 1296;
 Best Local Similarity 56.9%; Pred. No. 8.4e-30;
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 Db 998 VFYKQWVNISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 1057
 QY 61 VGCND-TRYVGIRYKVFDTGLTETIETLYSDPDPSPILKDFWGNVLLYKRYLLMLL 119
 Db 1058 DGCRRPRYIMIKYFNLFDKELNEKEIKLDYDSQNSGILKDFWGNVLYQDKPYMLNLF 1117
 QY 120 RTDKSITQNSNLFNINQQRGVYQK 143
 Db 1118 DPNKYVDVN---NIGIRGYMYLK 1137
 RESULT 15
 Q9X708_CLOBO PRELIMINARY; PRT; 441 AA.
 ID Q9X708_CLOBO PRELIMINARY;
 AC Q9X708;
 DT 01-NOV-1999 (TrEMBLrel. 12, Created)
 DT 01-NOV-1999 (TrEMBLrel. 12, Last sequence update)
 DT 01-OCT-2003 (TrEMBLrel. 25, Last annotation update)
 DE Botulinum neurotoxin type B (Fragment).
 GN Name=boNT/B;
 OS Clostridium botulinum.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.

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OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RX MEDLINE=9343691; PubMed=10413679;
RA Lalli G., Herreros J., Osborne S.L., Montecucco C., Rossetto O.,
RA Schiavo G.;
RT "Functional characterisation of tetanus and botulinum neurotoxins
RT binding domains.";
RL J. Cell Sci 112:2715-2724(1999).
DR EMBL; AJ242628; CAB43706.1; -; Genomic_DNA.
DR HSP; P10844; IEPW.
DR SMR; Q9X708; 1-441.
DR GO; GO:0009405; P:pathogenesis; IEA.
KW Neurotoxin.
FT NON_TER 1
FT NON_TER 441
SQ SEQUENCE 441 AA; 52772 MW; 721DOB468E8C95A4 CRC64;

Query Match 39.6%; Score 301; DB 2; Length 441;
Best Local Similarity 39.9%; Pred. No. 4.1e-19;
Matches 63; Conservative 30; Mismatches 43; Indels 22; Gaps 5;

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Db 145 FEYSIREDISDYINRWPFVITNNS-DNAKIYINGKLESNIDIKDIGEVIANGEIIFKLD 203

Qy 62 GCND-TRYVGIRYKVFDTLGLKTEIETLYSDEPDPSILKDFWGNLYLLYNKRYLLNL-- 118
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Qy 119 -----LRTDKSI-----TONSNFLNINQORGVV 141
Db 264 KNSYIKLKDSSVGEILTRSKYNQNSNYIN---YRNLY 298

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Search completed: March 2, 2006, 00:46:24
Job time : 73.8376 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:46:47 ; Search time 17.7077 Seconds
(without alignments)
672.325 Million cell updates/sec

Title: US-08-981-087B-3
Perfect score: 761
Sequence: 1 VFNTQMISIDYINKWIFV.....ITQNSNFINQQRGVYQKP 144

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 572060 seqs, 82675679 residues

Total number of hits satisfying chosen parameters: 572060

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Issued Patents AA:*
1: /cgn2_6/ptodata/1/iaa/5 COMB pep:*
2: /cgn2_6/ptodata/1/iaa/6 COMB pep:*
3: /cgn2_6/ptodata/1/iaa/H COMB pep:*
4: /cgn2_6/ptodata/1/iaa/PCRTUS COMB pep:*
5: /cgn2_6/ptodata/1/iaa/RE COMB pep:*
6: /cgn2_6/ptodata/1/iaa/backfiles1.pcp:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	440.5	57.9	382	2	US-09-288-326A-9
2	440.5	57.9	382	1	US-09-548-409B-9
3	440.5	57.9	438	1	US-08-480-604A-23
4	440.5	57.9	438	1	US-08-405-496A-23
5	440.5	57.9	438	2	US-08-915-136-23
6	440.5	57.9	438	2	US-09-084-517-23
7	440.5	57.9	462	1	US-08-480-604A-26
8	440.5	57.9	462	1	US-08-405-496A-26
9	440.5	57.9	462	2	US-08-915-136-26
10	440.5	57.9	462	2	US-09-084-517-26
11	440.5	57.9	1296	1	US-08-480-604A-28
12	440.5	57.9	1296	1	US-08-405-496A-28
13	440.5	57.9	1296	2	US-08-915-136-28
14	440.5	57.9	1296	2	US-09-084-517-28
15	423.5	55.7	848	2	US-10-360-101-219
16	284.5	37.4	1169	2	US-09-255-829-20
17	284.5	37.4	1290	2	US-10-360-101-220
18	240.5	31.6	452	1	US-07-618-312A-2
19	240.5	31.6	452	1	US-07-618-312A-4
20	240.5	31.6	452	1	US-08-280-228-2
21	240.5	31.6	452	1	US-08-280-228-4
22	240.5	31.6	618	1	US-08-668-381A-5
23	240.5	31.6	858	2	US-08-913-880C-17
24	240.5	31.6	858	2	US-08-913-880C-16
25	240.5	31.6	860	2	US-08-913-880C-15
26	240.5	31.6	862	2	US-08-913-880C-14
27	240.5	31.6	865	2	US-08-913-880C-13

28	240.5	31.6	866	2	US-08-913-880C-12	Sequence 12, Appl
29	240.5	31.6	874	2	US-08-913-880C-11	Sequence 11, Appl
30	240.5	31.6	875	2	US-08-913-880C-10	Sequence 10, Appl
31	240.5	31.6	1315	2	US-08-913-880C-1	Sequence 1, Appl
32	226.5	29.8	452	1	US-08-110-786A-8	Sequence 8, Appl
33	91.5	12.0	366	2	US-09-248-796A-14679	Sequence 14679, A
34	89	11.7	2366	1	US-08-480-604A-10	Sequence 10, Appl
35	89	11.7	2366	1	US-08-405-496A-10	Sequence 10, Appl
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37	89	11.7	2366	2	US-08-957-310-10	Sequence 10, Appl
38	89	11.7	2366	2	US-10-011-366-10	Sequence 10, Appl
39	89	11.7	2366	2	US-09-084-517-10	Sequence 10, Appl
40	84.5	11.1	717	2	US-09-248-796A-18993	Sequence 18993, A
41	84	11.0	392	6	5196304-2	Patent No. 5196304
42	80	10.5	887	1	US-07-867-106-3	Sequence 3, Appl
43	78.5	10.3	900	1	US-08-630-822A-62	Sequence 62, Appl
44	78.5	10.3	900	1	US-09-005-069-62	Sequence 62, Appl
45	78.5	10.3	900	2	US-09-171-156A-21	Sequence 21, Appl

ALIGNMENTS

RESULT 1
US-09-288-326A-9
; Sequence 9, Application US/09288326A
; Patent No. 6776990
; GENERAL INFORMATION:
; APPLICANT: Steward, Lance E.
; APPLICANT: Aoki, K. Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Methods and Compositions for the
; TITLE OF INVENTION: Treatment of Pancreatitis
; FILE REFERENCE: 17282
; CURRENT APPLICATION NUMBER: US/09/288,326A
; CURRENT FILING DATE: 1999-04-08
; NUMBER OF SEQ ID NOS: 15
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 9
; LENGTH: 382
; TYPE: PRT
; ORGANISM: Clostridium Botulinum
US-09-288-326A-9

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Best Local Similarity	57.6%	Pred. No.	2.4e-42						
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Db	84	VFKYSQMINISDYINRWIFVTITNNRLNNSKIYINGRLIDQKPIISNLGNIHASNNIMFKL	143						
Qy	61	VGCNDT-RYVGIRPKVPDTLTKTEITLVSDEPDPSILKDFWGNVLLYNKRYVLLNLL	119						
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Qy	120	RTDKSITQNS-----NFLNINQORG	139						
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RESULT 2
US-09-548-409B-9
; Sequence 9, Application US/09548409B
; Patent No. 6843998
; GENERAL INFORMATION:
; APPLICANT: Steward, Lance E.
; APPLICANT: Aoki, K. Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Methods and Compositions for the
; TITLE OF INVENTION: Treatment of Pancreatitis
; FILE REFERENCE: 17282CIP(AP)
; CURRENT APPLICATION NUMBER: US/09/548,409B

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; CURRENT FILING DATE: 2000-04-13
; PRIOR APPLICATION NUMBER: US 09/288,326
; PRIOR FILING DATE: 1999-04-08
; NUMBER OF SEQ ID NOS: 12
; SOFTWARE: FastSeq for Windows Version 3.0
; SEQ ID NO 9
; LENGTH: 382
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-09-348-409B-9

Query Match          57.9%; Score 440.5; DB 2; Length 382;
Best Local Similarity 57.6%; Pred. No. 2.4e-42;
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Qy 1 VFNYTQMISIDYINKWIFVTITNNRLNRSRIYINGNLIDEKISINLGDHVSNDILFKI 60
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Qy 61 VGCNDT-RYVGIRYKVPDTELKTEIETLYSDPDPSSILKDFWGNVLLYNKRYVLLNLL 119
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Db 144 DGCGRDTHRYIWKYFNLFDKELNEKEIKDLYDNQSNISGILKDFWGDYLDYKPYVLLNLY 203
   |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:

Qy 120 RTDKSITQNS----NFLNINQQRG 139
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RESULT 3
US-08-480-604A-23
; Sequence 23, Application US/08480604A
; Patent No. 5736139
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/480,604A
; FILING DATE: 07-JUN-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/422,711
; FILING DATE: 14-APR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.

; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPD-01763
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 23:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 438 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: Protein
US-08-480-604A-23

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Best Local Similarity 57.6%; Pred. No. 2.9e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

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Qy 61 VGCNDT-RYVGIRYKVPDTELKTEIETLYSDPDPSSILKDFWGNVLLYNKRYVLLNLL 119
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Qy 120 RTDKSITQNS----NFLNINQQRG 139
   |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
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RESULT 4
US-08-405-496A-23
; Sequence 23, Application US/08405496A
; Patent No. 5919665
; GENERAL INFORMATION:
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM
; TITLE OF INVENTION: NEUROTOXIN
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: USA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/405,496A
; FILING DATE: 16-MAR-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
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;
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPND-01308
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 23:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 438 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-405-496A-23

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Best Local Similarity 57.6%; Pred. No. 2.9e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

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DB 140 VFKYSQMINISDIYINRWIFVTITNNRLNSKIYINGNLIDKSIHSDIHSNLPKI 199
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RESULT 5
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; Sequence 23, Application US/08915136
; Patent No. 6290960
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.30
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; FILING DATE:
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; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321

;
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPND-01763
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 23:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 438 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-915-136-23

Query Match 57.9%; Score 440.5; DB 2; Length 438;
Best Local Similarity 57.6%; Pred. No. 2.9e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

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DB 140 VFKYSQMINISDIYINRWIFVTITNNRLNSKIYINGNLIDKSIHSDIHSNLPKI 199
QY 61 VGCNDT-RYVGIRYKVPDTELGKTEIETLSDEPDPSILKDFWGNLYLNKRYLLNL 119
DB 200 DGCRTTHRYIWKYFNLFDEKELNEKIKLDYDNQNSGILKDFWGDYLYQDKPYTMLNLY 259
QY 120 RTDKSITONS----NFLNINQORG 139
DB 260 DPNKYVDVNNVGIRGYMLKGPGR 283

RESULT 6
US-08-915-136-23
; Sequence 23, Application US/09084517
; Patent No. 6613329
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.25
; CURRENT APPLICATION NUMBER: US/09/084,517
; FILING DATE:
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
```

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; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: CARROLL, PETER G.
; REGISTRATION NUMBER: 32,837
; REFERENCE/DOCKET NUMBER: OPHD-01610
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 23:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 438 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-09-084-517-23

Query Match 57.9%; Score 440.5; DB 2; Length 438;
Best Local Similarity 57.6%; Pred. No. 2.9e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNYTQMSISDYINKWIFVTITNNRLNRSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
Db 140 VFKYSQMINISDYINRWIFVTITNNRLNRSKIYINGRLIDQKPSNLGNIHASNNIMFKL 199
Qy 61 VGCNDT-RYVGIRYKVFDTLGTETIETLYSDPSPSILKDFWGNVLLNKRYYLLNLL 119
Db 200 DGCRTTHRYIWKYFNLFDKELNEKEIKDLYDNQSGILKDFWGDYLYQDKPYMLNLY 259
Qy 120 RTDKSITQNS-----NFLNINQQRG 139
Db 260 DPNKYVDVNVNGIRGYMYLKGPRG 283

RESULT 7
US-08-480-604A-26
; Sequence 26, Application US/08480604A
; Patent No. 5736139
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHVE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/480,604A
; FILING DATE: 07-JUN-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/422,711
; FILING DATE: 14-APR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
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; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01763
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 26:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 462 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-480-604A-26

Query Match 57.9%; Score 440.5; DB 1; Length 462;
Best Local Similarity 57.6%; Pred. No. 3.1e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNYTQMSISDYINKWIFVTITNNRLNRSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
Db 164 VFKYSQMINISDYINRWIFVTITNNRLNRSKIYINGRLIDQKPSNLGNIHASNNIMFKL 223
Qy 61 VGCNDT-RYVGIRYKVFDTLGTETIETLYSDPSPSILKDFWGNVLLNKRYYLLNLL 119
Db 224 DGCRTTHRYIWKYFNLFDKELNEKEIKDLYDNQSGILKDFWGDYLYQDKPYMLNLY 283
Qy 120 RTDKSITQNS-----NFLNINQQRG 139
Db 284 DPNKYVDVNVNGIRGYMYLKGPRG 307

RESULT 8
US-08-405-496A-26
; Sequence 26, Application US/08405496A
; Patent No. 5919665
; GENERAL INFORMATION:
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: USA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/405,496A
; FILING DATE: 16-MAR-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
```

PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01308
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 26:
SEQUENCE CHARACTERISTICS:
LENGTH: 462 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-405-496A-26

Query Match 57.9%; Score 440.5; DB 1; Length 462;
Best Local Similarity 57.6%; Pred. No. 3.1e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

QY 1 VFNVTOMISIDYINKWIFVTITNNRLNRSRIYINGNLIDKSIISNLGDIHVSDNIIPLKI 60
DB 164 VFYQSQMINISDIYNRWIFVTITNNRLNNSKIYINGRLIDQKPIISNLGNIHASNNIMFKL 223

QY 61 VGCNDT-RYVGIRYKVFDTTELGTETIETLYSDPEPDSILKDFWGNLYLLNRYLLMLL 119
DB 224 DGCRRTHRYIWKYFNLFKELNEKEIKLDYDQNSGILKDFWGDYLYQDKPYMLNLY 283

QY 120 RTDKSITONS-----NFLNINQORG 139
DB 284 DPNKYVDVNVGIRGYMYLKGPRG 307

RESULT 9
US-08-915-136-26
Sequence 26, Application US/08915136
Patent No. 6290960
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
APPLICANT: THALLEY, BRUCE S.
APPLICANT: PADHYE, NISHA V.
APPLICANT: FIRCA, JOSEPH R.
APPLICANT: STAFFORD, DOUGLAS C.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 32
CORRESPONDENCE ADDRESS:
ADDRESSER: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/915,136
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/480,604
FILING DATE:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/405,496
FILING DATE: 16-MAR-1995

PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01308
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 26:
SEQUENCE CHARACTERISTICS:
LENGTH: 462 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-405-496A-26

Query Match 57.9%; Score 440.5; DB 1; Length 462;
Best Local Similarity 57.6%; Pred. No. 3.1e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

QY 1 VFNVTOMISIDYINKWIFVTITNNRLNRSRIYINGNLIDKSIISNLGDIHVSDNIIPLKI 60
DB 164 VFYQSQMINISDIYNRWIFVTITNNRLNNSKIYINGRLIDQKPIISNLGNIHASNNIMFKL 223

QY 61 VGCNDT-RYVGIRYKVFDTTELGTETIETLYSDPEPDSILKDFWGNLYLLNRYLLMLL 119
DB 224 DGCRRTHRYIWKYFNLFKELNEKEIKLDYDQNSGILKDFWGDYLYQDKPYMLNLY 283

QY 120 RTDKSITONS-----NFLNINQORG 139
DB 284 DPNKYVDVNVGIRGYMYLKGPRG 307

RESULT 9
US-08-915-136-26
Sequence 26, Application US/08915136
Patent No. 6290960
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
APPLICANT: THALLEY, BRUCE S.
APPLICANT: PADHYE, NISHA V.
APPLICANT: FIRCA, JOSEPH R.
APPLICANT: STAFFORD, DOUGLAS C.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 32
CORRESPONDENCE ADDRESS:
ADDRESSER: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/915,136
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/480,604
FILING DATE:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/405,496
FILING DATE: 16-MAR-1995

PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01763
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 26:
SEQUENCE CHARACTERISTICS:
LENGTH: 462 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-915-136-26

Query Match 57.9%; Score 440.5; DB 2; Length 462;
Best Local Similarity 57.6%; Pred. No. 3.1e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

QY 1 VFNVTOMISIDYINKWIFVTITNNRLNRSRIYINGNLIDKSIISNLGDIHVSDNIIPLKI 60
DB 164 VFYQSQMINISDIYNRWIFVTITNNRLNNSKIYINGRLIDQKPIISNLGNIHASNNIMFKL 223

QY 61 VGCNDT-RYVGIRYKVFDTTELGTETIETLYSDPEPDSILKDFWGNLYLLNRYLLMLL 119
DB 224 DGCRRTHRYIWKYFNLFKELNEKEIKLDYDQNSGILKDFWGDYLYQDKPYMLNLY 283

QY 120 RTDKSITONS-----NFLNINQORG 139
DB 284 DPNKYVDVNVGIRGYMYLKGPRG 307

RESULT 10
US-08-915-136-26
Sequence 26, Application US/09084517
Patent No. 6613329
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
APPLICANT: WILLIAMS, JAMES A.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 30
CORRESPONDENCE ADDRESS:
ADDRESSER: HAVERSTOCK, MEDLEN & CARROLL
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/084,517
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/
FILING DATE: 16-MAR-1995

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; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: CARROLL, PETER G.
; REGISTRATION NUMBER: 32,837
; REFERENCE/DOCKET NUMBER: OPHD-01610
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 26:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 462 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-484-517-26

Query Match 57.9%; Score 440.5; DB 2; Length 462;
Best Local Similarity 57.6%; Pred. No. 3.1e-42;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

QY 1 VFNVTQMISIDYINKWIFVTITNNLGNRIYINGNLIDEKSIISNLGDIHVSDNILEFKI 60
Db 164 VFKYSQMINISDYINRWIFVTITNNLNNKIYINGRLIDQKPIISNLGNIHASNNIMFKL 223
QY 61 VGCNDT-RYVGIRYFKVFDTELGKTEITLYSDEPDPSILKDFWGNLYLNKRYVLLNLL 119
Db 224 DGCRRTHRYIWKYFNLFKELNEKEIKDLYDNQNSGILKDFWGDYLYQDKPYMLNLY 283
QY 120 RTDKSITONS----NFLNINQORG 139
Db 284 DPNKYVDVNNVGIRGYMYLKGPGRG 307

RESULT 11
US-08-480-604A-28
; Sequence 28, Application US/08480604A
; Patent No. 5736139
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/480,604A
; FILING DATE: 07-JUN-1995
; CLASSIFICATION: 424

; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/422,711
; FILING DATE: 14-APR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01763
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 28:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1296 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-480-604A-28

Query Match 57.9%; Score 440.5; DB 1; Length 1296;
Best Local Similarity 57.6%; Pred. No. 1.3e-41;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

QY 1 VFNVTQMISIDYINKWIFVTITNNLGNRIYINGNLIDEKSIISNLGDIHVSDNILEFKI 60
Db 998 VFKYSQMINISDYINRWIFVTITNNLNNKIYINGRLIDQKPIISNLGNIHASNNIMFKL 1057
QY 61 VGCNDT-RYVGIRYFKVFDTELGKTEITLYSDEPDPSILKDFWGNLYLNKRYVLLNLL 119
Db 1058 DGCRRTHRYIWKYFNLFKELNEKEIKDLYDNQNSGILKDFWGDYLYQDKPYMLNLY 1117
QY 120 RTDKSITONS----NFLNINQORG 139
Db 1118 DPNKYVDVNNVGIRGYMYLKGPGRG 1141

RESULT 12
US-08-405-496A-28
; Sequence 28, Application US/08405496A
; Patent No. 5919665
; GENERAL INFORMATION:
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE FOR CLOSTRIDIUM BOTULINUM
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: USA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/405,496A
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; FILING DATE: 16-MAR-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01308
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 28:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1296 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-405-496A-28

Query Match 57.9%; Score 440.5; DB 1; Length 1296;
Best Local Similarity 57.6%; Pred. No. 1.3e-41;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

QY 1 VFNVTQMSISDYINKWIFVTITNRLNLSRIYINGNLIDKSIISNLGDIHVSNDILFKI 60
DB 998 VFVKSQMINISDYINRWIFVTITNRLNLSRIYINGNLIDKSIISNLGDIHVSNDILFKI 1057

QY 61 VGCNDT-RVVGIRYKVFDETLGKTEIETLYSDPDPSILKDFWGNLYLLNRYLLNL 119
DB 1058 DGCRTTHRYIWKYFNLFDEKELNEKEIKDLYDNQNSGILKDFWGDYLDYDKPYTMYLNLY 1117

QY 120 RTDKSITONS-----NFLNINQORG 139
DB 1118 DPNKYVDVNVNGIRGYMYLKGPRG 1141

RESULT 13
US-08-915-136-28
; Sequence 28, Application US/08915136
; Patent No. 6290960
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; SOFTWARE: Patent In Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/915,136

; FILING DATE: 16-MAR-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01308
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 28:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1296 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-915-136-28

Query Match 57.9%; Score 440.5; DB 2; Length 1296;
Best Local Similarity 57.6%; Pred. No. 1.3e-41;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

QY 1 VFNVTQMSISDYINKWIFVTITNRLNLSRIYINGNLIDKSIISNLGDIHVSNDILFKI 60
DB 998 VFVKSQMINISDYINRWIFVTITNRLNLSRIYINGNLIDKSIISNLGDIHVSNDILFKI 1057

QY 61 VGCNDT-RVVGIRYKVFDETLGKTEIETLYSDPDPSILKDFWGNLYLLNRYLLNL 119
DB 1058 DGCRTTHRYIWKYFNLFDEKELNEKEIKDLYDNQNSGILKDFWGDYLDYDKPYTMYLNLY 1117

QY 120 RTDKSITONS-----NFLNINQORG 139
DB 1118 DPNKYVDVNVNGIRGYMYLKGPRG 1141

RESULT 14
US-08-915-136-28
; Sequence 28, Application US/09084517
; Patent No. 6613329
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; OPERATING SYSTEM: IBM PC compatible
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: PC-DOS/MS-DOS
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; SOFTWARE: PatentIn Release #1.0, Version #1.25
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/09/084,517
; FILING DATE:
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: CARROLL, PETER G.
; REGISTRATION NUMBER: 32,837
; REFERENCE/DOCKET NUMBER: OPHD-01610
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 28:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1296 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-09-084-517-28

Query Match 57.9%; Score 440.5; DB 2; Length 1296;
Best Local Similarity 57.6%; Pred. No. 1.3e-41;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

QY 1 VFNVTOMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
Db |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
998 VFKYSQMINISDYINRWIFVTITNNRLNNSKIYINGRLIDQKPSNLGNIHASNNIMFKL 1057

QY 61 VGCNDT-RYVGIRYKVFDTLGTETIETLYSDPDPSSILKDFWGNVLLYNKRYLLNLL 119
Db |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
1058 DGCEDTHRYIWKYFNLFDEKELNEKEIKOLYDQNSGILKDFWGDYLYQDKPYMLNLY 1117

QY 120 RTDKSITQNS-----NFLNINQQRG 139
Db |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
1118 DPNKYVDVNVNNGIRGYMLKGRG 1141

RESULT 15
US-10-360-101-219
; Sequence 219, Application US/10360101
; Patent No. 6861236
; GENERAL INFORMATION:
; APPLICANT: Moll, Gert N.
; APPLICANT: Leenhouts, Cornelis J.
; TITLE OF INVENTION: Export and modification of (poly)peptide in the lantibiotic way
; FILE REFERENCE: 2183-5673
; CURRENT APPLICATION NUMBER: US/10/360,101
; CURRENT FILING DATE: 2003-02-07
; PRIOR APPLICATION NUMBER: EP 02077060.8
; PRIOR FILING DATE: 2002-05-24
; NUMBER OF SEQ ID NOS: 309
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 219
; LENGTH: 848
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: sequence A-heavy chain of clostridium botulinum toxin type A

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US-10-360-101-219

Query Match 55.7%; Score 423.5; DB 2; Length 848;
Best Local Similarity 56.9%; Pred. No. 6.6e-40;
Matches 82; Conservative 23; Mismatches 34; Indels 5; Gaps 2;

QY 1 VFNVTOMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
Db |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
550 VFKYSQMINISDYINRWIFVTITNNRLTTSKIYINGRLIDQKPSNLGNIHASNNIMFKL 609

QY 61 VGCNDT-RYVGIRYKVFDTLGTETIETLYSDPDPSSILKDFWGNVLLYNKRYLLNLL 119
Db |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
610 DGCEDPRYIWKYFNLFDEKELNEKEIKOLYDQNSGILKDFWGNLYQDKPYMLNLF 669

QY 120 RTDKSITQNSNFLNINQQRG 143
Db |||:|||||:|||||:|||||:|||||:|||||:|||||:|||||:
670 DPNKYVDVN----NIGIRGYMLK 689

Search completed: March 2, 2006, 00:49:34
Job time : 18.7077 secs

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GenCore version 5.1.7
Copyright (c) 1993 - 2006 Bioceleration Ltd.

OM protein - protein search, using sw model

Run on: March 2, 2006, 01:11:03 ; Search time 57.2993 Seconds
(without alignments)
1050.055 Million cell updates/sec

Title: US-08-981-087B-3

Perfect score: 761

Sequence: 1 VFNTQMISISYINKWIFV.....ITQNSFLNIOQGVYQKP 144

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 1867569 seqs, 417829326 residues

Total number of hits satisfying chosen parameters: 1867569

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Published Applications_AA Main:
1: /cgn2_6/ptodata/1/pubpaa/US07_PUBCOMB.pep.*
2: /cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pep.*
3: /cgn2_6/ptodata/1/pubpaa/US09_PUBCOMB.pep.*
4: /cgn2_6/ptodata/1/pubpaa/US10A_PUBCOMB.pep.*
5: /cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pep.*
6: /cgn2_6/ptodata/1/pubpaa/US11_PUBCOMB.pep.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	761	100.0	144	2	US-08-981-087A-3
2	761	100.0	431	2	US-08-981-087A-1
3	761	100.0	432	3	US-09-910-186A-16
4	761	100.0	432	3	US-09-910-186A-34
5	761	100.0	432	4	US-10-452-024-178
6	761	100.0	645	4	US-10-130-973A-8
7	761	100.0	645	4	US-10-478-516-5
8	761	100.0	657	4	US-10-478-516-6
9	761	100.0	657	4	US-10-478-516-7
10	761	100.0	685	4	US-10-130-973A-7
11	761	100.0	862	4	US-10-130-973A-4
12	761	100.0	887	4	US-10-130-973A-6
13	761	100.0	979	4	US-10-478-516-26
14	761	100.0	1032	4	US-10-130-973A-15
15	761	100.0	1092	4	US-10-130-973A-14
16	761	100.0	1192	4	US-10-478-516-23
17	761	100.0	1192	4	US-10-478-516-24
18	761	100.0	1278	4	US-10-452-024-152
19	761	100.0	1278	4	US-10-205-516-12
20	761	100.0	1288	4	US-10-205-516-26
21	632	83.0	1280	4	US-10-452-024-162
22	622	81.7	1268	4	US-10-452-024-156
23	612	80.4	448	4	US-10-354-774-73
24	612	80.4	448	4	US-10-271-012-73
25	612	80.4	448	4	US-10-729-122-73
26	612	80.4	448	4	US-10-729-039-73
27	612	80.4	448	5	US-10-729-527-73

28	612	80.4	448	5	US-10-727-898-73	Sequence 73, Appl
29	612	80.4	448	5	US-10-728-696-73	Sequence 73, Appl
30	612	80.4	448	6	US-11-001-241-73	Sequence 73, Appl
31	612	80.4	1274	4	US-10-354-774-71	Sequence 71, Appl
32	612	80.4	1274	4	US-10-271-012-71	Sequence 71, Appl
33	612	80.4	1274	4	US-10-452-024-6	Sequence 6, Appl
34	612	80.4	1274	4	US-10-729-122-71	Sequence 71, Appl
35	612	80.4	1274	4	US-10-729-039-71	Sequence 71, Appl
36	612	80.4	1274	5	US-10-729-527-71	Sequence 71, Appl
37	612	80.4	1274	5	US-10-727-898-71	Sequence 71, Appl
38	612	80.4	1274	5	US-10-728-696-71	Sequence 71, Appl
39	612	80.4	1274	6	US-11-001-241-71	Sequence 14, Appl
40	497.5	65.4	449	3	US-09-910-186A-14	Sequence 56, Appl
41	497.5	65.4	452	4	US-10-354-774-56	Sequence 56, Appl
42	497.5	65.4	452	4	US-10-271-012-56	Sequence 56, Appl
43	497.5	65.4	452	4	US-10-729-122-56	Sequence 56, Appl
44	497.5	65.4	452	4	US-10-729-039-56	Sequence 56, Appl
45	497.5	65.4	452	5	US-10-729-527-56	Sequence 56, Appl

ALIGNMENTS

RESULT 1
US-08-981-087A-3
Sequence 3, Application US/08981087A
Publication No. US20020081304A1
GENERAL INFORMATION:
APPLICANT: Elmore, Michael J.
APPLICANT: Mauchline, Margaret L.
APPLICANT: Minton, Nigel P.
APPLICANT: Pasechnik, Vladimir A.
APPLICANT: Titball, Richard W.
TITLE OF INVENTION: TYPE F BOTULINUM TOXIN AND USE THEREOF
NUMBER OF SEQUENCES: 6
CORRESPONDENCE ADDRESS:
ADDRESSEE: NIXON & VANDERHYE P.C.
STREET: 1100 No. US20020081304A1th Glebe Rd. 8th floor
CITY: Arlington
STATE: VA
COUNTRY: USA
ZIP: 22201-4741
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0; Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/981,087A
FILING DATE: 27-MAY-1998
CLASSIFICATION: 424
PRIOR APPLICATION DATA:
APPLICATION NUMBER: PCT/GB96/01409
FILING DATE: 12-JUN-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: GB 9511909.5
FILING DATE: 12-JUN-1995
ATTORNEY/AGENT INFORMATION:
NAME: Crawford, Arthur R.
REGISTRATION NUMBER: 25,327
REFERENCE/DOCKET NUMBER: 124-688
TELECOMMUNICATION INFORMATION:
TELEPHONE: 703-816-4000
TELEFAX: 703-816-4100
INFORMATION FOR SEQ ID NO: 3:
SEQUENCE CHARACTERISTICS:
LENGTH: 144 amino acids
TYPE: amino acid
STRANDEDNESS:
TOPOLOGY: linear
MOLECULE TYPE: peptide
US-08-981-087A-3

Query Match 100.0%; Score 761; DB 2; Length 144;
 Best Local Similarity 100.0%; Pred. No. 8.5e-71;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHVSNDILFKI 60
 Db 1 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHVSNDILFKI 60

Qy 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPDPSPILKDFWGNVLLYLNKRYLLNLLR 120
 Db 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPDPSPILKDFWGNVLLYLNKRYLLNLLR 120

Qy 121 TDKSITQNSFLNINQORGVYQKP 144
 Db 121 TDKSITQNSFLNINQORGVYQKP 144

RESULT 2
 US-08-981-087A-1
 ; Sequence 1, Application US/08981087A
 ; Publication No. US20020081304A1
 ; GENERAL INFORMATION:
 ; APPLICANT: Elmore, Michael J.
 ; APPLICANT: Mauchline, Margaret L.
 ; APPLICANT: Minton, Nigel P.
 ; APPLICANT: Pesechnik, Vladimir A.
 ; APPLICANT: Titball, Richard W.
 ; TITLE OF INVENTION: TYPE F BOTULINUM TOXIN AND USE THEREOF
 ; NUMBER OF SEQUENCES: 6
 ; CORRESPONDENCE ADDRESS:
 ; ADDRESSEE: NIXON & VANDERHYE P.C.
 ; STREET: 1100 No. US20020081304A1th Glebe Rd. 8th floor
 ; CITY: Arlington
 ; STATE: VA
 ; COUNTRY: USA
 ; ZIP: 22201-4741
 ; COMPUTER READABLE FORM:
 ; MEDIUM TYPE: Floppy disk
 ; COMPUTER: IBM PC compatible
 ; OPERATING SYSTEM: PC-DOS/MS-DOS
 ; SOFTWARE: Patentin Release #1.0, Version #1.30
 ; CURRENT APPLICATION NUMBER: US/08/981.087A
 ; FILING DATE: 27-MAY-1998
 ; CLASSIFICATION: 424
 ; PRIOR APPLICATION DATA:
 ; APPLICATION NUMBER: PCT/GB96/01409
 ; FILING DATE: 12-JUN-1996
 ; PRIOR APPLICATION DATA:
 ; APPLICATION NUMBER: GB 9511909.5
 ; FILING DATE: 12-JUN-1995
 ; ATTORNEY/AGENT INFORMATION:
 ; NAME: Crawford, Arthur R.
 ; REGISTRATION NUMBER: 25,327
 ; REFERENCE/DOCKET NUMBER: 124-688
 ; TELECOMMUNICATION INFORMATION:
 ; TELEPHONE: 703-816-4000
 ; TELEFAX: 703-816-4100
 ; INFORMATION FOR SEQ ID NO: 1:
 ; SEQUENCE CHARACTERISTICS:
 ; LENGTH: 431 amino acids
 ; TYPE: amino acid
 ; STRANDEDNESS:
 ; TOPOLOGY: linear
 ; MOLECULE TYPE: peptide
 ; US-08-981-087A-1

Query Match 100.0%; Score 761; DB 2; Length 431;
 Best Local Similarity 100.0%; Pred. No. 3.4e-70;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHVSNDILFKI 60

Db 145 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHVSNDILFKI 204
 Qy 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPDPSPILKDFWGNVLLYLNKRYLLNLLR 120
 Db 205 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPDPSPILKDFWGNVLLYLNKRYLLNLLR 264
 Qy 121 TDKSITQNSFLNINQORGVYQKP 144
 Db 265 TDKSITQNSFLNINQORGVYQKP 288

RESULT 3
 US-09-910-186A-16
 ; Sequence 16, Application US/09910186A
 ; Publication No. US20030009025A1
 ; GENERAL INFORMATION:
 ; APPLICANT: U.S. Army Medical Research & Material Command
 ; TITLE OF INVENTION: RECOMBINANT VACCINE AGAINST BOTULINUM
 ; FILE REFERENCE: A33626-A 067252.0107
 ; CURRENT APPLICATION NUMBER: US/09/910,186A
 ; CURRENT FILING DATE: 2001-07-20
 ; PRIOR APPLICATION NUMBER: PCT/US00/12890
 ; PRIOR FILING DATE: 2000-05-12
 ; PRIOR APPLICATION NUMBER: 09/611,419
 ; PRIOR FILING DATE: 2000-07-06
 ; PRIOR APPLICATION NUMBER: 60/133,865
 ; PRIOR FILING DATE: 1999-05-12
 ; PRIOR APPLICATION NUMBER: 60/133,866
 ; PRIOR FILING DATE: 1999-05-12
 ; PRIOR APPLICATION NUMBER: 60/133,867
 ; PRIOR FILING DATE: 1999-05-12
 ; PRIOR APPLICATION NUMBER: 60/133,868
 ; PRIOR FILING DATE: 1999-05-12
 ; PRIOR APPLICATION NUMBER: 60/133,869
 ; PRIOR FILING DATE: 1999-05-12
 ; PRIOR APPLICATION NUMBER: 60/133,873
 ; PRIOR FILING DATE: 1999-05-12
 ; PRIOR APPLICATION NUMBER: 08/123,975
 ; PRIOR FILING DATE: 1993-09-21
 ; NUMBER OF SEQ ID NOS: 34
 ; SOFTWARE: FastSeq for Windows Version 4.0
 ; SEQ ID NO 16
 ; LENGTH: 432
 ; TYPE: PRT
 ; ORGANISM: Artificial Sequence
 ; FEATURE:
 ; OTHER INFORMATION: Synthetic Construct
 ; US-09-910-186A-16

Query Match 100.0%; Score 761; DB 3; Length 432;
 Best Local Similarity 100.0%; Pred. No. 3.4e-70;
 Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHVSNDILFKI 60
 Db 146 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHVSNDILFKI 205

Qy 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPDPSPILKDFWGNVLLYLNKRYLLNLLR 120
 Db 206 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDPDPSPILKDFWGNVLLYLNKRYLLNLLR 265

Qy 121 TDKSITQNSFLNINQORGVYQKP 144
 Db 266 TDKSITQNSFLNINQORGVYQKP 289

RESULT 4
 US-09-910-186A-34
 ; Sequence 34, Application US/09910186A
 ; Publication No. US20030009025A1
 ; GENERAL INFORMATION:
 ; APPLICANT: U.S. Army Medical Research & Material Command

TITLE OF INVENTION: RECOMBINANT VACCINE AGAINST BOTULINUM

TITLE OF INVENTION: NEUROTOXIN

FILE REFERENCE: A33626-A 067252.0107

CURRENT APPLICATION NUMBER: US/09/910,186A

PRIOR FILING DATE: 2001-07-20

PRIOR APPLICATION NUMBER: PCT/US00/12890

PRIOR FILING DATE: 2000-05-12

PRIOR APPLICATION NUMBER: 09/611,419

PRIOR FILING DATE: 2000-07-06

PRIOR APPLICATION NUMBER: 60/133,865

PRIOR FILING DATE: 1999-05-12

PRIOR APPLICATION NUMBER: 60/133,866

PRIOR FILING DATE: 1999-05-12

PRIOR APPLICATION NUMBER: 60/133,867

PRIOR FILING DATE: 1999-05-12

PRIOR APPLICATION NUMBER: 60/133,868

PRIOR FILING DATE: 1999-05-12

PRIOR APPLICATION NUMBER: 60/133,869

PRIOR FILING DATE: 1999-05-12

PRIOR APPLICATION NUMBER: 60/133,873

PRIOR FILING DATE: 1999-05-12

PRIOR APPLICATION NUMBER: 08/123,975

PRIOR FILING DATE: 1993-03-21

NUMBER OF SEQ ID NOS: 34

SOFTWARE: FastSeq for Windows Version 4.0

SEQ ID NO 34

LENGTH: 432

TYPE: PRT

ORGANISM: Artificial Sequence

FEATURE:

OTHER INFORMATION: Synthetic Construct

US-09-910-186A-34

Query Match 100.0%; Score 761; DB 3; Length 432;

Best Local Similarity 100.0%; Pred. No. 3.4e-70;

Mismatches 0; Conservative 0; Indels 0; Gaps 0;

QY 1 VENTYQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHVSNDILFKI 60

DB 146 VENTYQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHVSNDILFKI 205

QY 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPPPSILKDFWGNLYLLNKRYYLLNLLR 120

DB 206 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPPPSILKDFWGNLYLLNKRYYLLNLLR 265

QY 121 TDKSITQNSFLNINQQRGVYQKP 144

DB 266 TDKSITQNSFLNINQQRGVYQKP 289

RESULT 5

US-10-452-024-178

Sequence 178, Application US/10452024

Publication No. US20040013687A1

GENERAL INFORMATION:

APPLICANT: Simpson, Lance

APPLICANT: Park, Jung-Beak

APPLICANT: Makymowich, Andrew

TITLE OF INVENTION: Compositions and Methods For Transsepithelial Molecular Transport

FILE REFERENCE: 9855-96U1

CURRENT APPLICATION NUMBER: US/10/452,024

CURRENT FILING DATE: 2003-06-02

PRIOR APPLICATION NUMBER: 60/384,949

PRIOR FILING DATE: 2002-05-31

NUMBER OF SEQ ID NOS: 188

SOFTWARE: Patent in version 3.2

SEQ ID NO 178

LENGTH: 432

TYPE: PRT

ORGANISM: Clostridium botulinum

US-10-452-024-178

Query Match 100.0%; Score 761; DB 4; Length 432;

Best Local Similarity 100.0%; Pred. No. 3.4e-70;

Mismatches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VENTYQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHVSNDILFKI 60

DB 146 VENTYQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHVSNDILFKI 205

QY 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPPPSILKDFWGNLYLLNKRYYLLNLLR 120

DB 206 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPPPSILKDFWGNLYLLNKRYYLLNLLR 265

QY 121 TDKSITQNSFLNINQQRGVYQKP 144

DB 266 TDKSITQNSFLNINQQRGVYQKP 289

RESULT 6

US-10-130-973A-8

Sequence 8, Application US/10130973A

Publication No. US20030147895A1

GENERAL INFORMATION:

APPLICANT: Shone, Clifford

APPLICANT: Sutton, John

APPLICANT: Silman, Nigel

TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells

FILE REFERENCE: 1581.0920000

CURRENT APPLICATION NUMBER: US/10/130,973A

CURRENT FILING DATE: 2002-10-21

PRIOR APPLICATION NUMBER: PCT/GB00/04644

PRIOR FILING DATE: 2000-12-04

PRIOR APPLICATION NUMBER: GB 9928530.6

PRIOR FILING DATE: 1999-12-02

PRIOR APPLICATION NUMBER: GB 008658.7

PRIOR FILING DATE: 2000-04-07

NUMBER OF SEQ ID NOS: 18

SOFTWARE: Patent in version 3.0

SEQ ID NO 8

LENGTH: 645

TYPE: PRT

ORGANISM: Artificial Sequence

FEATURE:

OTHER INFORMATION: synthetic construct

US-10-130-973A-8

Query Match 100.0%; Score 761; DB 4; Length 645;

Best Local Similarity 100.0%; Pred. No. 5.6e-70;

Mismatches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VENTYQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHVSNDILFKI 60

DB 359 VENTYQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIHVSNDILFKI 418

QY 61 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPPPSILKDFWGNLYLLNKRYYLLNLLR 120

DB 419 VGCNDTRYVGIRYFKVFDTELKTEIETLYSDEPPPSILKDFWGNLYLLNKRYYLLNLLR 478

QY 121 TDKSITQNSFLNINQQRGVYQKP 144

DB 479 TDKSITQNSFLNINQQRGVYQKP 502

RESULT 7

US-10-478-516-5

Sequence 5, Application US/10478516

Publication No. US2004020889A1

GENERAL INFORMATION:

APPLICANT: Sutton, John M.

APPLICANT: Shone, Clifford C.

TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins

FILE REFERENCE: 1581.1000000

CURRENT APPLICATION NUMBER: US/10/478,516

CURRENT FILING DATE: 2003-11-24

PRIOR APPLICATION NUMBER: PCT/GB02/02384

; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PUBLICATION NO.: US2004020889A1
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 5
; LENGTH: 645
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: diphtheria toxin translocation domain with BONT/F-HC
US-10-478-516-5

Query Match 100.0%; Score 761; DB 4; Length 645;
Best Local Similarity 100.0%; Pred. No. 5.6e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
Db 359 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 418

Qy 61 VGCNDTRYVGIRYKVFDTLTKETIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db 419 VGCNDTRYVGIRYKVFDTLTKETIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 478

Qy 121 TDKSITQNSFLNINQQRGVYQKP 144
Db 479 TDKSITQNSFLNINQQRGVYQKP 502

RESULT 8

US-10-478-516-6
; Sequence 6, Application US/10478516
; Publication No.: US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; PRIOR FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 6
; LENGTH: 657
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: thrombin linker, diphtheria toxin translocation domain, BONT/F-HC
US-10-478-516-6

Query Match 100.0%; Score 761; DB 4; Length 657;
Best Local Similarity 100.0%; Pred. No. 5.8e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
Db 371 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 430

Qy 61 VGCNDTRYVGIRYKVFDTLTKETIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db 431 VGCNDTRYVGIRYKVFDTLTKETIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 490

Qy 121 TDKSITQNSFLNINQQRGVYQKP 144
Db 491 TDKSITQNSFLNINQQRGVYQKP 514

RESULT 9

US-10-478-516-7
; Sequence 7, Application US/10478516
; Publication No.: US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; PRIOR FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 7
; LENGTH: 657
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: factor Xa linker, diphtheria toxin translocation domain, BONT/F-
US-10-478-516-7

Query Match 100.0%; Score 761; DB 4; Length 657;
Best Local Similarity 100.0%; Pred. No. 5.8e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 60
Db 371 VFNYTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDILFKI 430

Qy 61 VGCNDTRYVGIRYKVFDTLTKETIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db 431 VGCNDTRYVGIRYKVFDTLTKETIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 490

Qy 121 TDKSITQNSFLNINQQRGVYQKP 144
Db 491 TDKSITQNSFLNINQQRGVYQKP 514

RESULT 10

US-10-130-973A-7
; Sequence 7, Application US/10130973A
; Publication No.: US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; PRIOR FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008636.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 7
; LENGTH: 685
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-10-130-973A-7

Query Match 100.0%; Score 761; DB 4; Length 685;
Best Local Similarity 100.0%; Pred. No. 6.1e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 60
Db 399 VFNTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 458
Qy 61 VGCNDTRYVGRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db 459 VGCNDTRYVGRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 518
Qy 121 TDKSITQNSNLFNLINQQRGVYQKP 144
Db 519 TDKSITQNSNLFNLINQQRGVYQKP 542

RESULT 11
US-10-130-973A-4
; Sequence 4, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130.973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: Patent in version 3.0
; SEQ ID NO 4
; LENGTH: 862
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-10-130-973A-4

Query Match 100.0%; Score 761; DB 4; Length 862;
Best Local Similarity 100.0%; Pred. No. 8.1e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 60
Db 576 VFNTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 635
Qy 61 VGCNDTRYVGRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db 636 VGCNDTRYVGRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 695
Qy 121 TDKSITQNSNLFNLINQQRGVYQKP 144
Db 696 TDKSITQNSNLFNLINQQRGVYQKP 719

RESULT 12
US-10-130-973A-6
; Sequence 6, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130.973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6

; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: Patent in version 3.0
; SEQ ID NO 6
; LENGTH: 887
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-10-130-973A-6

Query Match 100.0%; Score 761; DB 4; Length 887;
Best Local Similarity 100.0%; Pred. No. 8.4e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 60
Db 601 VFNTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 660
Qy 61 VGCNDTRYVGRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db 661 VGCNDTRYVGRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 720
Qy 121 TDKSITQNSNLFNLINQQRGVYQKP 144
Db 721 TDKSITQNSNLFNLINQQRGVYQKP 744

RESULT 13
US-10-478-516-26
; Sequence 26, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; APPLICANT: Shone, Clifford C.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478.516
; CURRENT FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: Patent in version 3.1
; SEQ ID NO 26
; LENGTH: 979
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Protein sequence for YopT, factor Xa linker, diphtheria toxin
; OTHER INFORMATION: translocation
; OTHER INFORMATION: domain, with BoNT/F-HC
US-10-478-516-26

Query Match 100.0%; Score 761; DB 4; Length 979;
Best Local Similarity 100.0%; Pred. No. 9.5e-70;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 60
Db 693 VFNTQMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 752
Qy 61 VGCNDTRYVGRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 120
Db 753 VGCNDTRYVGRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNLYLLNKRYLLNLLR 812
Qy 121 TDKSITQNSNLFNLINQQRGVYQKP 144
Db 813 TDKSITQNSNLFNLINQQRGVYQKP 836

RESULT 14
US-10-130-973A-15
; Sequence 15, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: Patent in version 3.0
; SEQ ID NO 15
; LENGTH: 1032
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-10-130-973A-15

Query Match 100.0%; Score 761; DB 4; Length 1032;
Best Local Similarity 100.0%; Pred. No. 1e-69;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VFNTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDNILLFKI 60
Db VFNTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDNILLFKI 60

QY 61 VGCNDRYVGIRYFKVFDTELGKTEIETLYSDEPDPSILKDFWGNLYLLYNKRYLLNLLR 120
Db VGCNDRYVGIRYFKVFDTELGKTEIETLYSDEPDPSILKDFWGNLYLLYNKRYLLNLLR 120

QY 121 TDKSITQNSNLFNINQQRGVYQKP 144
Db TDKSITQNSNLFNINQQRGVYQKP 889

RESULT 15
US-10-130-973A-14
; Sequence 14, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: Patent in version 3.0
; SEQ ID NO 14
; LENGTH: 1092
; TYPE: PRT
; ORGANISM: Clostridium botulinum
US-10-130-973A-14

Query Match 100.0%; Score 761; DB 4; Length 1092;
Best Local Similarity 100.0%; Pred. No. 1.1e-69;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 VFNTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDNILLFKI 60
Db VFNTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSNDNILLFKI 60

QY 61 VGCNDRYVGIRYFKVFDTELGKTEIETLYSDEPDPSILKDFWGNLYLLYNKRYLLNLLR 120
Db VGCNDRYVGIRYFKVFDTELGKTEIETLYSDEPDPSILKDFWGNLYLLYNKRYLLNLLR 120

QY 121 TDKSITQNSNLFNINQQRGVYQKP 144
Db TDKSITQNSNLFNINQQRGVYQKP 949

Search completed: March 2, 2006, 01:17:48
Job time : 58.2993 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 01:12:18 ; Search time 5.84687 Seconds
(without alignments)
491.279 Million cell updates/sec

Title: US-08-981-087B-3
Perfect score: 761
Sequence: 1 VFNTQMISISDYINKWIFV.....ITQNSNLFNINQQRGVYQKP 144

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 133702 seqs, 19947517 residues

Total number of hits satisfying chosen parameters: 133702

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Published Applications AA New:*

- 1: /cgn2_6/ptodata/1/pubpaa/US08_NEW_PUB.pep.*
- 2: /cgn2_6/ptodata/1/pubpaa/US06_NEW_PUB.pep.*
- 3: /cgn2_6/ptodata/1/pubpaa/US07_NEW_PUB.pep.*
- 4: /cgn2_6/ptodata/1/pubpaa/PCT_NEW_PUB.pep.*
- 5: /cgn2_6/ptodata/1/pubpaa/US09_NEW_PUB.pep.*
- 6: /cgn2_6/ptodata/1/pubpaa/US10_NEW_PUB.pep.*
- 7: /cgn2_6/ptodata/1/pubpaa/US11_NEW_PUB.pep.*
- 8: /cgn2_6/ptodata/1/pubpaa/US60_NEW_PUB.pep.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	761	100.0	1059	US/11/062	Sequence 5, Appli
2	761	100.0	1084	US/11/062	Sequence 8, Appli
3	612	80.4	838	US-10-909-769-28	Sequence 28, Appli
4	497.5	65.4	829	US-10-909-769-26	Sequence 26, Appli
5	440.5	57.9	849	US-10-909-769-18	Sequence 18, Appli
6	440.5	57.9	1067	US/11/062	Sequence 3, Appli
7	440.5	57.9	1092	US/11/062	Sequence 6, Appli
8	296.5	39.0	855	US-10-909-769-30	Sequence 30, Appli
9	296	38.9	900	US-10-909-769-20	Sequence 20, Appli
10	284.5	37.4	1070	US/11/062	Sequence 4, Appli
11	284.5	37.4	1095	US/11/062	Sequence 7, Appli
12	284.5	37.4	1169	US-11-077-550-20	Sequence 24, Appli
13	245.5	32.3	834	US-10-909-769-24	Sequence 24, Appli
14	240.5	31.6	1315	US-11-077-550-141	Sequence 141, Appl
15	239	31.4	842	US-10-909-769-22	Sequence 22, Appli
16	89	11.7	2367	US-11-051-453-42	Sequence 42, Appli
17	76.5	10.1	1356	US-11-129-741-2939	Sequence 2939, Ap
18	76.5	10.1	1356	US-11-129-741-2941	Sequence 2941, Ap
19	76.5	10.1	1356	US-11-129-741-2943	Sequence 2943, Ap
20	76.5	10.1	1356	US-11-129-741-2945	Sequence 2945, Ap
21	76.5	10.1	1356	US-11-129-741-2949	Sequence 2949, Ap
22	76.5	10.1	1356	US-11-129-741-2951	Sequence 2951, Ap
23	76.5	10.1	1356	US-11-129-741-4245	Sequence 4245, Ap
24	76.5	10.1	1362	US-10-895-064-420	Sequence 420, App
25	76.5	10.1	1362	US-11-129-741-420	Sequence 420, App

26	74.5	9.8	1351	7	US-11-129-741-2937	Sequence 2937, Ap
27	74.5	9.8	1385	7	US-11-129-741-3655	Sequence 3655, Ap
28	73.5	9.7	360	7	US-11-098-686-10796	Sequence 10796, A
29	73	9.6	302	6	US-10-926-709-2	Sequence 2, Appli
30	73	9.6	302	6	US-10-926-709-7	Sequence 7, Appli
31	72.5	9.5	1351	7	US-11-129-741-2947	Sequence 2947, Ap
32	72	9.5	302	6	US-10-926-709-8	Sequence 8, Appli
33	72	9.5	1089	7	US-11-098-686-10150	Sequence 10150, A
34	71.5	9.4	369	7	US-11-087-099-2275	Sequence 2275, Ap
35	71	9.3	448	7	US-11-052-554A-230	Sequence 230, App
36	70.5	9.3	140	7	US-11-052-554A-240	Sequence 240, App
37	70	9.2	342	7	US-11-087-099-4284	Sequence 4284, Ap
38	70	9.2	567	6	US-10-485-517-216	Sequence 216, App
39	70	9.2	743	6	US-10-485-517-351	Sequence 351, App
40	70	9.2	877	6	US-10-485-517-200	Sequence 200, App
41	69	9.1	326	7	US-11-087-099-2330	Sequence 2330, Ap
42	69	9.1	326	7	US-11-087-099-3028	Sequence 3028, Ap
43	69	9.1	326	7	US-11-087-099-8258	Sequence 8258, Ap
44	69	9.1	330	7	US-11-087-099-10448	Sequence 10448, A
45	69	9.1	464	6	US-10-959-322-5	Sequence 5, Appli

ALIGNMENTS

RESULT 1
US/11/062
Sequence 5, Application US/11062471A
Publication No. US20050255093A1
GENERAL INFORMATION:
APPLICANT: SHONE, Clifford Charles
APPLICANT: SUTTON, John Mark
APPLICANT: HALLIS, Bassam
APPLICANT: SILMAN, Nigel
TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
FILE REFERENCE: 1581.0800001
CURRENT APPLICATION NUMBER: US/11/062.471A
CURRENT FILING DATE: 2005-02-22
PRIOR APPLICATION NUMBER: 09/831,050
PRIOR FILING DATE: 1999-11-05
PRIOR APPLICATION NUMBER: PCT/GB99/03699
PRIOR FILING DATE: 1999-11-05
PRIOR APPLICATION NUMBER: GB 9824282.9
PRIOR FILING DATE: 1998-11-05
NUMBER OF SEQ ID NOS: 11
SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 5
LENGTH: 1059
TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
US/11/062,471A-5

Query Match 100.0%; Score 761; DB 7; Length 1059;
Best Local Similarity 100.0%; Pred. No. 1.9e-67;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 VFNTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIKDGIVHSDNLFK 60
Db 773 VFNTQMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIKDGIVHSDNLFK 832
QY 61 VCCNTRYGVIRYKVFTELGKTEIETLYSDPPSILKDFWGNVLLYNKRYLLNL 120
Db 833 VCCNTRYGVIRYKVFTELGKTEIETLYSDPPSILKDFWGNVLLYNKRYLLNL 892
QY 121 TDKSITQNSNLFNINQQRGVYQKP 144
Db 893 TDKSITQNSNLFNINQQRGVYQKP 916

RESULT 2
US/11/062

; Sequence 8, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062.471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: Patent In Ver. 2.1
; SEQ ID NO 8
; LENGTH: 1084
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
US/11/062.471A-8

Query Match 100.0%; Score 761; DB 7; Length 1084;
Best Local Similarity 100.0%; Pred. No. 2e-67;
Matches 144; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKTSINLGDHVSNDILFKI 60
Db 798 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKTSINLGDHVSNDILFKI 857

Qy 61 VGCNDTRYVGIRYKPKVFDTELKTEIETLSYSDPDPSPILKDFWGNLYLLNKRYYLLMLLR 120
Db 858 VGCNDTRYVGIRYKPKVFDTELKTEIETLSYSDPDPSPILKDFWGNLYLLNKRYYLLMLLR 917

Qy 121 TDKSITQNSFLNINQORGVYQKP 144
Db 918 TDKSITQNSFLNINQORGVYQKP 941

RESULT 3
US-10-909-769-28
; Sequence 28, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: Patent in version 3.3
; SEQ ID NO 28
; LENGTH: 838
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-28

Query Match 80.4%; Score 612; DB 6; Length 838;
Best Local Similarity 82.9%; Pred. No. 8e-53;
Matches 116; Conservative 10; Mismatches 14; Indels 0; Gaps 0;

Qy 1 VFNTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKTSINLGDHVSNDILFKI 60

Db 558 IFRYEELNRLSNINRWIFVTITNNRLGNSRIYINGNLIVEKTSINLGDHVSNDILFKI 617
Qy 61 VGCNDTRYVGIRYKPKVFDTELKTEIETLSYSDPDPSPILKDFWGNLYLLNKRYYLLMLLR 120
Db 618 VGCDDDETYVGIRYKPKVFNTELDKTEIETLSYSDPDPSPILKDFWGNLYLLNKRYYLLMLLR 677

Qy 121 TDKSITQNSFLNINQORGV 140
Db 678 KDKYITLNSGILNINQORGV 697

RESULT 4
US-10-909-769-26
; Sequence 26, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: Patent in version 3.3
; SEQ ID NO 26
; LENGTH: 829
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-26

Query Match 65.4%; Score 497.5; DB 6; Length 829;
Best Local Similarity 68.1%; Pred. No. 1.7e-41;
Matches 94; Conservative 21; Mismatches 22; Indels 1; Gaps 1;

Qy 2 FNYTQMSISDYINKWIFVTITNNRLGNSRIYINGNLIDEKTSINLGDHVSNDILFKIV 61
Db 552 FNYGNANGISDYINKWIFVTITNDRLGDSKLYINGNLIDQKSLNGLNIHVSNDILFKIV 611

Qy 62 GVCNDTRYVGIRYKPKVFDTELKTEIETLSYSDPDPSPILKDFWGNLYLLNKRYYLLMLLR 121
Db 612 NCSYTRYIGIRYFNIFDKELDETEIQTLYSNEPTNWLKDFWGNLYLLYDKEYLLNVLKP 671

Qy 122 DKSI-TONGSNFLNINQOR 138
Db 672 NNFIDRRKOSTLSINNIR 689

RESULT 5
US-10-909-769-18
; Sequence 18, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: Patent in version 3.3
; SEQ ID NO 18
; LENGTH: 849
; TYPE: PRT
; ORGANISM: Artificial Sequence

FEATURE:
OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-18

Query Match 57.9%; Score 440.5; DB 6; Length 849;
Best Local Similarity 57.6%; Pred. No. 7.4e-36;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNVTOMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 60
Db 551 VFYKQMINISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 610

Qy 61 VGCNDT-RYVGIRYFKVFDTELKTEIETLYSDPEPSILKDFWGNLYLNKRYLLNLL 119
Db 611 DGCRTTHRYIWKYFNFLDKELNEKEIKDLYNQNSGILKDFWGDYLYQDKPYMLNLY 670

Qy 120 RTDKSITQNS----NFLNINQQRG 139
Db 671 DPNKYVDVNVGIRGYMYLKGPRG 694

RESULT 6

US/11/062
Sequence 3, Application US/11062471A
Publication No. US20050255093A1
GENERAL INFORMATION:
APPLICANT: SHONE, Clifford Charles
APPLICANT: SUTTON, John Mark
APPLICANT: HALLIS, Bassam
APPLICANT: SILMAN, Nigel
TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
FILE REFERENCE: 1581.0800001
CURRENT APPLICATION NUMBER: US/11/062,471A
CURRENT FILING DATE: 2005-02-22
PRIOR APPLICATION NUMBER: 09/831,050
PRIOR FILING DATE: 1999-11-05
PRIOR APPLICATION NUMBER: PCT/GB99/03699
PRIOR FILING DATE: 1999-11-05
PRIOR APPLICATION NUMBER: GB 9824282.9
PRIOR FILING DATE: 1998-11-05
NUMBER OF SEQ ID NOS: 11
SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 3
LENGTH: 1067
TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
OTHER INFORMATION: Construct comprising Mn-SOD from B. steaerothermophilus, a linker,
US/11/062,471A-3

Query Match 57.9%; Score 440.5; DB 7; Length 1067;
Best Local Similarity 57.6%; Pred. No. 9.7e-36;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNVTOMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 60
Db 769 VFYKQMINISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 828

Qy 61 VGCNDT-RYVGIRYFKVFDTELKTEIETLYSDPEPSILKDFWGNLYLNKRYLLNLL 119
Db 829 DGCRTTHRYIWKYFNFLDKELNEKEIKDLYNQNSGILKDFWGDYLYQDKPYMLNLY 888

Qy 120 RTDKSITQNS----NFLNINQQRG 139
Db 889 DPNKYVDVNVGIRGYMYLKGPRG 912

RESULT 7

US/11/062
Sequence 6, Application US/11062471A
Publication No. US20050255093A1
GENERAL INFORMATION:
APPLICANT: SHONE, Clifford Charles

APPLICANT: SUTTON, John Mark
APPLICANT: HALLIS, Bassam
APPLICANT: SILMAN, Nigel
TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
FILE REFERENCE: 1581.0800001
CURRENT APPLICATION NUMBER: US/11/062,471A
CURRENT FILING DATE: 2005-02-22
PRIOR APPLICATION NUMBER: 09/831,050
PRIOR FILING DATE: 1999-11-05
PRIOR APPLICATION NUMBER: PCT/GB99/03699
PRIOR FILING DATE: 1999-11-05
PRIOR APPLICATION NUMBER: GB 9824282.9
PRIOR FILING DATE: 1998-11-05
NUMBER OF SEQ ID NOS: 11
SOFTWARE: PatentIn Ver. 2.1
SEQ ID NO 6
LENGTH: 1092
TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
US/11/062,471A-6

Query Match 57.9%; Score 440.5; DB 7; Length 1092;
Best Local Similarity 57.6%; Pred. No. 1e-35;
Matches 83; Conservative 26; Mismatches 30; Indels 5; Gaps 2;

Qy 1 VFNVTOMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 60
Db 794 VFYKQMINISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 853

Qy 61 VGCNDT-RYVGIRYFKVFDTELKTEIETLYSDPEPSILKDFWGNLYLNKRYLLNLL 119
Db 854 DGCRTTHRYIWKYFNFLDKELNEKEIKDLYNQNSGILKDFWGDYLYQDKPYMLNLY 913

Qy 120 RTDKSITQNS----NFLNINQQRG 139
Db 914 DPNKYVDVNVGIRGYMYLKGPRG 937

RESULT 8

US-10-909-769-30
Sequence 30, Application US/10909769
Publication No. US2006024331A1
GENERAL INFORMATION:
APPLICANT: Fernandez-Salas, Ester
APPLICANT: Steward, Lance E.
APPLICANT: Lin, Wei-Jen
APPLICANT: Aoki, Kei Roger
APPLICANT: Sachs, George
TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist
FILE REFERENCE: ALLE0010-100 (R012003-146)
CURRENT APPLICATION NUMBER: US/10/909,769
CURRENT FILING DATE: 2004-08-02
NUMBER OF SEQ ID NOS: 34
SOFTWARE: PatentIn version 3.3
SEQ ID NO 30
LENGTH: 855
TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-30

Query Match 39.0%; Score 296.5; DB 6; Length 855;
Best Local Similarity 49.6%; Pred. No. 1.3e-21;
Matches 58; Conservative 22; Mismatches 36; Indels 1; Gaps 1;

Qy 2 FNYTOMISISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 61
Db 552 FEYSIKONISDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIISNLGDIHVSDNLFKI 611

Qy 62 GCNDT-RYVGIRYFKVFDTELKTEIETLYSDPEPSILKDFWGNLYLNKRYLLN 117

APPLICANT: Marks, Philip
APPLICANT: Sutton, J. Mark
APPLICANT: Stancombe, Patrick
APPLICANT: Wayne, Jonathan
TITLE OF INVENTION: Recombinant Toxin Fragments
FILE REFERENCE: 1581.0130004
CURRENT APPLICATION NUMBER: US/11/077,550
CURRENT FILING DATE: 2005-03-11
PRIOR APPLICATION NUMBER: 10/241,596
PRIOR FILING DATE: 2002-09-12
PRIOR FILING DATE: 1999-02-23
PRIOR FILING DATE: 1997-08-22
PRIOR FILING DATE: 1997-08-22
PRIOR FILING DATE: 08/782,893
PRIOR FILING DATE: 1996-12-27
PRIOR APPLICATION NUMBER: GB9625996.5
PRIOR FILING DATE: 1996-12-13
PRIOR APPLICATION NUMBER: GB9617671.4
PRIOR FILING DATE: 1996-08-23
NUMBER OF SEQ ID NOS: 179
SOFTWARE: Patent in version 3.1
SEQ ID NO 20
LENGTH: 1169
TYPE: PRT
ORGANISM: Clostridium botulinum
US-11-077-550-20

Query Match 37.4%; Score 284.5; DB 7; Length 1169;
Best Local Similarity 39.3%; Pred. No. 2.9e-20;
Matches 59; Conservative 27; Mismatches 45; Indels 19; Gaps 4;

QY 2 FNYTOMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIKDFWGNVLLNKRYLLNL 61
DB 987 FEYNIREDISYINWFFVTITNN-LNNAKIYINGKLESNTDKDIREVIANGIEIIFKLD 1045

QY 62 GEND-TRVVGIRYKVPDETELKTEIETLYSDEPDPSILKDFWGNVLLNKRYLLNL-- 118
DB 1046 GUIDRTQFIMWKYFISFIMTELSSQSIERYKIOSYSEYKDFWGNPLMKNKRYMFWNAGN 1105

QY 119 -----LRTDKSI-----TONSNFLN 133
DB 1106 KNSYIKLKKDPSVGEILTRSKYNQSKYN 1135

RESULT 13
US-10-909-769-24
Sequence 24, Application US/10909769
Publication No. US20060024331A1
GENERAL INFORMATION:
APPLICANT: Fernandez-Salas, Ester
APPLICANT: Steward, Lance E.
APPLICANT: Lin, Wei-Jen
APPLICANT: Aoki, Kei Roger
APPLICANT: Sachs, George
TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteristic
FILE REFERENCE: ALLE0010-100 (ROI2003-146)
CURRENT APPLICATION NUMBER: US/10/909,769
CURRENT FILING DATE: 2004-08-02
NUMBER OF SEQ ID NOS: 34
SOFTWARE: Patent in version 3.3
SEQ ID NO 24
LENGTH: 834
TYPE: PRT
ORGANISM: Artificial Sequence
FEATURE:
OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-24

Query Match 32.3%; Score 245.5; DB 6; Length 834;
Best Local Similarity 35.0%; Pred. No. 1.4e-16;
Matches 48; Conservative 33; Mismatches 55; Indels 1; Gaps 1;

QY 1 VFNYTOMISIDYINKWIFVTITNNRLGNSRIYINGNLIDEKSIKDFWGNVLLNKRYLLNL 60
DB 544 IPDYSESLSHGTGYNKWFVTITNNIMGYMKLYINGELKQSQKIEDLDEVLKDKTIVFGI 603

QY 61 -VGCNDRYVGIRYKVPDETELKTEIETLYSDEPDPSILKDFWGNVLLNKRYLLNL 119
DB 604 DENIDENQMLWIRDFNIFSKELSNEIDINIVIEGQILRLRWIKDYGWGNPLKFDTEYIINDN 663

QY 120 RTDKSITONSFLNINQ 136
DB 664 YIDRYTAPESNVLVLVQ 680

RESULT 14
US-11-077-550-141
Sequence 141, Application US/11077550
Publication No. US2005024435A1
GENERAL INFORMATION:
APPLICANT: Shone, Clifford Charles
APPLICANT: Quinn, Conrad Padraig
APPLICANT: Foster, Keith Alan
APPLICANT: Chaddock, John
APPLICANT: Marks, Philip
APPLICANT: Sutton, J. Mark
APPLICANT: Stancombe, Patrick
APPLICANT: Wayne, Jonathan
TITLE OF INVENTION: Recombinant Toxin Fragments
FILE REFERENCE: 1581.0130004
CURRENT APPLICATION NUMBER: US/11/077,550
CURRENT FILING DATE: 2005-03-11
PRIOR APPLICATION NUMBER: 10/241,596
PRIOR FILING DATE: 2002-09-12
PRIOR APPLICATION NUMBER: 09/255,829
PRIOR FILING DATE: 1999-02-23
PRIOR APPLICATION NUMBER: PCT/GB97/02273
PRIOR FILING DATE: 1997-08-22
PRIOR APPLICATION NUMBER: 08/782,893
PRIOR FILING DATE: 1996-12-27
PRIOR APPLICATION NUMBER: GB9625996.5
PRIOR FILING DATE: 1996-12-13
PRIOR APPLICATION NUMBER: GB9617671.4
PRIOR FILING DATE: 1996-08-23
NUMBER OF SEQ ID NOS: 179
SOFTWARE: Patent in version 3.1
SEQ ID NO 141
LENGTH: 1315
TYPE: PRT
ORGANISM: Clostridium tetani
US-11-077-550-141

Query Match 31.6%; Score 240.5; DB 7; Length 1315;
Best Local Similarity 42.0%; Pred. No. 7.5e-16;
Matches 47; Conservative 22; Mismatches 42; Indels 1; Gaps 1;

QY 15 NKWFIITNNRLGNSRIYINGNLIDEKSIKDFWGNVLLNKRYLLNLNLRTRKSI 73
DB 1029 NKWFIITNNRLGNSRIYINGNLIDEKSIKDFWGNVLLNKRYLLNLNLRTRKSI 1088

QY 74 FKVFDTELKTEIETLYSDEPDPSILKDFWGNVLLNKRYLLNLNLRTRKSI 125
DB 1089 FRIFCKALNPKEIKLYTSYLSITFLDRDFWGNPLRYDTEYIIPVASSKDV 1140

RESULT 15
US-10-909-769-22
Sequence 22, Application US/10909769
Publication No. US20060024331A1
GENERAL INFORMATION:
APPLICANT: Fernandez-Salas, Ester
APPLICANT: Steward, Lance E.
APPLICANT: Lin, Wei-Jen
APPLICANT: Aoki, Kei Roger
APPLICANT: Sachs, George

; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist

; FILE REFERENCE: ALLE0010-100 (ROI2003-146)

; CURRENT APPLICATION NUMBER: US/10/909,769

; CURRENT FILING DATE: 2004-08-02

; NUMBER OF SEQ ID NOS: 34

; SOFTWARE: PatentIn version 3.3

; SEQ ID NO 22

; LENGTH: 842

; TYPE: PRT

; ORGANISM: Artificial sequence

; FEATURE:

; OTHER INFORMATION: Amino acid sequence of HC

US-10-909-769-22

Query Match 31.4%; Score 239; DB 6; Length 842;
 Best Local Similarity 37.0%; Pred. No. 6.3e-16;
 Matches 54; Conservative 25; Mismatches 57; Indels 10; Gaps 2;

QY 2 FNYTQMISISDYINKWIFVTITNNELGNSRIYINGNLIDEKSIISNLGDIHVSDNILEKIV 61

Db 544 PSYDISNNAPGY-NKWFVTVTNNMGNKLYINGKLIDTIKVKELTGINFSTITFEIN 602

QY 62 GCNDTRYV-----GIRYFKVFDTELKTEIETLYSDEPDPSILKDFWGNVLLYNKR 112

Db 603 KIPDTGLITSDSDNINMWIRDFYIFAKELDGKDINILENSLQYTNVVKDYWGNDLRYNKE 662

QY 113 YLLNLLRTDKSITONSFLNINQOR 138

Db 663 YVMNIDYLNRYMVANSRQIVFNTRR 688

Search completed: March 2, 2006, 01:18:30
 Job time : 6.84687 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:31:42 ; Search time 68.5139 Seconds
(without alignment)
917.057 Million cell updates/sec

Title: US-08-981-087B-4
Perfect score: 757
Sequence: 1 NIPENTRLTYGVEIIRKNG.....TSSNGCFWFSIKHGWQEN 143

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 2443163 seqs, 439378781 residues

Total number of hits satisfying chosen parameters: 2443163

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : A Geneseq 21:.*
1: geneseqp1980a:.*
2: geneseqp1990a:.*
3: geneseqp2000a:.*
4: geneseqp2001a:.*
5: geneseqp2002a:.*
6: geneseqp2003a:.*
7: geneseqp2003bs:.*
8: geneseqp2004a:.*
9: geneseqp2005a:.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	757	100.0	143	2	Aaw09017 Immunogen
2	757	100.0	431	2	Aaw09014 Immunogen
3	757	100.0	432	4	Aab04103 Botulinum
4	757	100.0	432	4	Aab04096 Botulinum
5	757	100.0	645	4	Aae07894 Modified
6	757	100.0	645	6	Aae35692 Dipt HN d
7	757	100.0	657	6	Aae35693 BoNT/F-Hc
8	757	100.0	657	6	Aae35694 BoNT/F-Hc
9	757	100.0	685	4	Aae07893 Modified
10	757	100.0	862	4	Aae07890 Modified
11	757	100.0	887	4	Aae07892 Modified
12	757	100.0	979	6	Aae35713 BoNT/F-Hc
13	757	100.0	1032	4	Aae07901 C. botuli
14	757	100.0	1059	3	Aay93309 A mangane
15	757	100.0	1084	3	Aay93312 A mangane
16	757	100.0	1092	4	Aae07900 C. botuli
17	757	100.0	1192	6	Aae35711 BoNT/F-Hc
18	757	100.0	1192	6	Aae35710 BoNT/F-Hc
19	743	98.2	432	3	Aay77138 Synthetic
20	607	80.2	448	3	Aaw68399 Clostridi
21	401	53.0	419	4	Aab04095 Botulinum
22	401	53.0	449	3	Aay77137 Synthetic
23	401	53.0	449	4	Aab04094 Botulinum
24	401	53.0	452	2	Aaw68396 Clostridi

25	374.5	49.5	451	2	Aaw68395	Clostridi
26	366	48.3	74	9	ADZ36069	C. botuli
27	350.5	46.3	73	9	ADZ36073	C. botuli
28	306.5	40.5	206	3	Aay77144	Botulinum
29	306.5	40.5	382	3	AAB36303	BoNT/A pr
30	306.5	40.5	382	9	ADW24418	C botulin
31	306.5	40.5	382	9	ADZ60271	BoNT/A pr
32	306.5	40.5	415	4	AAB04083	Botulinum
33	306.5	40.5	425	9	ADZ60276	BoNT/A pr
34	306.5	40.5	434	4	AAB04089	Botulinum
35	306.5	40.5	435	4	AAB04090	Botulinum
36	306.5	40.5	437	4	AAB04088	Botulinum
37	306.5	40.5	438	2	AAR95008	Type A ne
38	306.5	40.5	438	2	Aaw68389	Clostridi
39	306.5	40.5	438	3	AAY77134	Synthetic
40	306.5	40.5	445	2	Aaw68391	Clostridi
41	306.5	40.5	462	2	AAR95009	Type A ne
42	306.5	40.5	462	2	Aaw68390	Clostridi
43	306.5	40.5	859	9	ADZ69764	Botulinum
44	306.5	40.5	1067	3	AAY93307	A mangane
45	306.5	40.5	1092	3	AAY93310	A mangane

ALIGNMENTS

RESULT 1

Aaw09017
ID Aaw09017 standard; protein; 143 AA.

AC Aaw09017;
DT 17-OCT-2003 (revised)
DT 31-MAR-1997 (first entry)
XX immunogenic type F botulinum toxin polypeptide (aall36-1278).
DE Botulinum toxin; neurotoxin; BoNT/F; immunogen; vaccine; botulism.
KW Clostridium botulinum; type F strain Langeland.
OS
XX
XX WO9641881-A1.
XX
XX 27-DEC-1996.
XX
XX 12-JUN-1996; 96WO-GB001409.
XX
XX 12-JUN-1995; 95GB-00011909.
XX
XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.
XX
XX Elmore MJ, Mauchline ML, Minton NP, Pasechnik VA;
XX WPI; 1997-065467/06.
XX
XX Immunogenic type F botulinum toxin polypeptide(s) - allows recombinant vaccine prodn.
XX
XX Claim 5; Page 19; 37pp; English.
XX
XX Novel polypeptides (Aaw09014-17) respectively comprise amino acids 848-1278, 848-991, 992-1135 and 1136-1278 in the heavy chain of a type F botulinum neurotoxin (BoNT/F). They lack the L chain and HN epitopes necessary for metalloprotease activity and toxin internalisation. They are free of botulinum toxin activity but can induce protective immunity to a type F botulinum toxin, making them useful for vaccine prodn. Recombinant polypeptides can be produced in transformed host cells, esp. as fusion proteins, e.g. with maltose-binding protein to facilitate purification. (Updated on 17-OCT-2003 to standardise OS field)

Sequence 143 AA;

Query Match 100.0%; Score 757; DB 2; Length 143;

Best Local Similarity 100.0%; Pred. No. 4.4e-71; Mismatches 0; Indels 0; Gaps 0;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 NIFSNRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPE 60
DB 1 NIFSNRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPE 60

QY 61 KIIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNI 120
DB 61 KIIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNI 120

QY 121 RKTSSNGCFWFSFISKEHGQEN 143
DB 121 RKTSSNGCFWFSFISKEHGQEN 143

RESULT 2
AAW09014
ID AAW09014 standard; protein; 431 AA.
XX AC AAW09014;
XX DT 17-OCT-2003 (revised)
XX DT 31-MAR-1997 (first entry)
XX DE Immunogenic type F botulinum toxin heavy chain (aa848-1278).
XX KW Botulinum toxin; neurotoxin; BoB/F; immunogen; vaccine; botulism.
XX OS Clostridium botulinum; type F strain Langeland.
XX PN WO9641881-A1.
XX PD 27-DEC-1996.
XX PF 12-JUN-1996; 96WO-GB001409.
XX PR 12-JUN-1995; 95GB-00011909.
XX PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
XX PI Elmore MJ, Mauchline ML, Minton NP, Pasechnik VA;
XX DR WPI; 1997-065467/06.
XX DR N-PSDB; AAT48100.
XX PT Immunogenic type F botulinum toxin polypeptide(s) - allows recombinant vaccine prodn.
XX PS Claim 5; Page 16-17; 37pp; English.

CC A polypeptide (AAW09014) comprises the heavy chain (amino acids 848-1278) of a type F botulinum neurotoxin (BoNT/F), and can be produced using a synthetic gene (AAT48101) based on the natural gene sequence (AAT48100) for the heavy chain. The polypeptides and its fragments (see also CC AAW09015-17) lack the light chain and HN epitopes necessary for CC metalloprotease activity and toxin internalisation. They are free of CC botulinum toxin activity but can induce protective immunity to a type F CC botulinum toxin, making them useful for vaccine prodn. Recombinant CC polypeptides can be produced in transformed host cells, esp. as fusion CC proteins, e.g. with maltose binding protein to facilitate purification. CC (Updated on 17-OCT-2003 to standardise OS field)

XX Sequence 431 AA;
Query Match 100.0%; Score 757; DB 2; Length 431;
Best Local Similarity 100.0%; Pred. No. 1.8e-70;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 NIFSNRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPE 60
DB 289 NIFSNRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVYRLYADISIAKPE 348

QY 61 KIIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNI 120
DB 349 KIIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGFHSNNLVASSWYNNI 408

QY 121 RKTSSNGCFWFSFISKEHGQEN 143
DB 409 RKTSSNGCFWFSFISKEHGQEN 431

RESULT 3
AAB04103
ID AAB04103 standard; protein; 432 AA.
XX AC AAB04103;
XX DT 11-APR-2001 (first entry)
XX DE Botulism toxin heavy chain C-terminal sequence (serotype F).
XX KW Botulism; toxin; neurotoxin; heavy chain; recombinant expression; recombinant vector; antigen; immune response; vaccine; bacterium; infection.
XX OS Synthetic.
XX OS Clostridium botulinum.
XX PN WO2000067700-A2.
XX PD 16-NOV-2000.
XX PF 12-MAY-2000; 2000WO-US012890.
XX PR 12-MAY-1999; 99US-0133865P.
XX PR 12-MAY-1999; 99US-0133866P.
XX PR 12-MAY-1999; 99US-0133867P.
XX PR 12-MAY-1999; 99US-0133868P.
XX PR 12-MAY-1999; 99US-0133869P.
XX PR 12-MAY-1999; 99US-0133873P.
XX PR 29-JUL-1999; 99US-0146192P.
XX PA (USSA) US ARMY MEDICAL RES & MATERIAL COMMAND.
XX PI Smith LA, Byrne MP, Middlebrook JL, Lapenotiere H;
XX DR WPI; 2001-016048/02.
XX DR N-PSDB; AAA54499.
XX PT New nucleic acids encoding the carboxy- or amino-terminal portions of the heavy chain of botulinum neurotoxin of serotype A-G, useful as vaccine against botulism.
XX PS Disclosure; Fig 18b; 73pp; English.

CC Botulism neurotoxins are translated as a single 150 kDa polypeptide chain and then posttranslationally nicked, forming a dichain consisting of a 100 kDa heavy chain and a 50 kDa light chain which remain linked by a disulfide bond. Nucleic acids encoding the carboxy-terminal (HC) or amino-terminal (HN) portion of the heavy chain of botulinum neurotoxin (BoNT) can be used in recombinant expression vectors and expressed in transformed cells to produce peptide antigens useful for eliciting an immune response to give protective immunity against botulinum neurotoxin, which causes botulism. The nucleic acids are expressible in a recombinant organism such as Escherichia coli or Pichia pastoris. The use of recombinant nucleic acids are advantageous since it eliminates the need to culture large quantities of hazardous toxin-producing bacterium. CC Production yield from the genetically engineered product is also high and cost of production is lower. The nucleic acids can be derived from CC Clostridium botulinum serotypes A-G

XX Sequence 432 AA;
Query Match 100.0%; Score 757; DB 4; Length 432;
Best Local Similarity 100.0%; Pred. No. 1.8e-70;

Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 NIFSNTRYTGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAKPE 60
Db 290 NIFSNTRYTGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAKPE 349
Qy 61 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 350 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 409
Qy 121 RKNSSNGCFWFSFISKEHGOEN 143
Db 410 RKNSSNGCFWFSFISKEHGOEN 432

RESULT 4
AAB04096
ID AAB04096 standard; protein; 432 AA.
XX
AC AAB04096;
XX
DT 11-APR-2001 (first entry)
XX
DE Botulism toxin heavy chain C-terminal sequence (serotype F).
XX
KW Botulism; toxin; neurotoxin; heavy chain; recombinant expression;
KW recombinant vector; antigen; immune response; vaccine; bacterium;
KW infection.
XX
OS Synthetic.
OS Clostridium botulinum.
XX
PN WO200067700-A2.
XX
PD 16-NOV-2000.
XX
PF 12-MAY-2000; 2000WO-US012890.
XX
PR 12-MAY-1999; 99US-0133866P.
PR 12-MAY-1999; 99US-0133866P.
PR 12-MAY-1999; 99US-0133866P.
PR 12-MAY-1999; 99US-0133866P.
PR 12-MAY-1999; 99US-0133866P.
PR 12-MAY-1999; 99US-0133866P.
PR 29-JUL-1999; 99US-0146192P.
XX
(USSA) US ARMY MEDICAL RES & MATERIAL COMMAND.
PA
PI Smith LA, Byrne MP, Middlebrook JL, Lapenotiere H;
XX
DR WPI; 2001-016048/02.
DR N-PSDB; AAA54490.
XX
PT New nucleic acids encoding the carboxy- or amino-terminal portions of the
PT heavy chain of botulinum neurotoxin of serotype A-G, useful as vaccine
PT against botulism.
XX
PS Claim 3; Fig 9b; 73pp; English.
XX
CC Botulism neurotoxins are translated as a single 150 kDa polypeptide chain
CC and then posttranslationally nicked, forming a dichain consisting of a
CC 100 kDa heavy chain and a 50 kDa light chain which remain linked by a
CC disulfide bond. Nucleic acids encoding the carboxy-terminal (HC) or amino
CC-terminal (HN) portion of the heavy chain of botulinum neurotoxin (BoNT)
CC can be used in recombinant expression vectors and expressed in
CC transformed cells to produce peptide antigens useful for eliciting an
CC immune response to give protective immunity against botulinum neurotoxin,
CC which causes botulism. The nucleic acids are expressible in a recombinant
CC organisms such as Escherichia coli or Pichia pastoris. The use of
CC recombinant nucleic acids are advantageous since it eliminates the need
CC to culture large quantities of hazardous toxin-producing bacterium.
CC Production yield from the genetically engineered product is also high and
CC cost of production is lower. The nucleic acids can be derived from

CC Clostridium botulinum serotypes A-G
XX
SQ Sequence 432 AA;
Query Match 100.0%; Score 757; DB 4; Length 432;
Best Local Similarity 100.0%; Pred. No. 1.8e-70; Indels 0; Gaps 0;
Matches 143; Conservative 0; Mismatches 0;
Qy 1 NIFSNTRYTGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAKPE 60
Db 290 NIFSNTRYTGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAKPE 349
Qy 61 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 350 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 409
Qy 121 RKNSSNGCFWFSFISKEHGOEN 143
Db 410 RKNSSNGCFWFSFISKEHGOEN 432

RESULT 5
AAE07894
ID AAE07894 standard; protein; 645 AA.
XX
AC AAE07894;
XX
DT 11-SEP-2003 (revised)
DT 01-NOV-2001 (first entry)
XX
DE Modified clostridial heavy chain fragment #1.
XX
KW Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
KW diphtheria neurotoxin; botulinum neurotoxin type F; BoNT/F.
XX
OS Corynebacterium diphtheriae.
OS Clostridium botulinum.
OS Chimeric.
XX
PN WO200158936-A2.
XX
PD 16-AUG-2001.
XX
PF 04-DEC-2000; 2000WO-GB004644.
XX
PR 02-DEC-1999; 99GB-00028530.
PR 07-APR-2000; 2000GB-00008658.
XX
PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
XX
PI Shone CC, Sutton JM, Silman N;
XX
DR WPI; 2001-514643/56.
XX
PT New non toxic polypeptide for delivery of a therapeutic agent for the
PT treatment of a CNS disorder comprising a binding domain that translocates
PT the therapeutic agent into the neuronal cells.
XX
PS Example 2; Page 44; 50pp; English.
XX
CC The invention relates to a non toxic polypeptide, for delivery of a
CC therapeutic agent to a neuronal cell, which comprises a binding domain
CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
CC Hc) that binds to the neuronal cell and a translocation domain (amino
CC terminal half of HC, designated as HN), that translocates the therapeutic
CC agent into the neuronal cell, where the translocation domain is not a HN
CC domain of a clostridial neurotoxin and is not a fragment or derivative of
CC a HN domain of a clostridial toxin. Polypeptides of the invention are
CC useful for the treatment of a disease state associated with neuronal
CC cells. The polypeptide constructs are useful for delivering therapeutic
CC substances to neuronal cells. They are useful to treat disorders of the
CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours

CC and infection. They are also useful in gene therapy. The present sequence
 CC is modified clostridial heavy chain fragment. This sequence is
 CC constructed by fusing the binding domain of botulinum neurotoxin type F
 CC (BoNT/F) with translocation domain of diphtheria neurotoxin. (Updated on
 CC 11-SEP-2003 to standardise OS field)
 XX
 SQ Sequence 645 AA;

Query Match 100.0%; Score 757; DB 4; Length 645;
 Best Local Similarity 100.0%; Pred. No. 3e-70;
 Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 NIFSNTRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60
 Db 503 NIFSNTRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 562
 QY 61 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHNNLVASSWYNNI 120
 Db 563 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHNNLVASSWYNNI 622
 QY 121 RNTSSNGCFWSPFSKEHGQEN 143
 Db 623 RNTSSNGCFWSPFSKEHGQEN 645

RESULT 6
 AAE35692
 ID AAE35692 standard; protein; 645 AA.
 XX
 AC AAE35692;

23-OCT-2003 (revised)
 17-JUN-2003 (first entry)

Dipt HN domain-BoNT/F-Hc fusion construct.

Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
 muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 torticollis; blephorospasm; asthma; fusion protein; diphtheria toxin;
 translocation domain; HN domain; Dipt; Hc; botulinum type F neurotoxin;
 binding domain; BoNT/F.

Corynebacterium diphtheriae.
 Clostridium botulinum.
 Chimeric.

WO200296467-A2.

05-DEC-2002.

21-MAY-2002; 2002WO-GB002384.

24-MAY-2001; 2001GB-00012687.

(MICR-) MICROBIOLOGICAL RES AUTHORITY.

Sutton JM, Shone CC;

WPI; 2003-167247/16.

Conjugate for modulating cell survival and cell growth, modulating
 release of inflammatory mediator from cells, comprises injected bacterial
 effector protein and a carrier that targets the protein to target cell.

Example 12; Page 57-60; 130pp; English.

The invention relates to a conjugate comprising an injected bacterial
 effector protein and a carrier that targets the effector protein to a
 target cell. Pharmaceutical composition of the invention is useful for a
 treatment selected from promoting or inhibiting survival of cells;
 preventing and reversing damage to cells; killing cells; promoting or
 inhibiting the growth of cells, apoptosis, release of an inflammatory

CC mediator from cells, division of cells and treating intracellular
 CC infection and regulating nitric oxide release from cells. The invention
 CC is useful in the manufacture of a medicament for treating a neuronal
 CC cell, for intracellular infection, for interfering with intracellular
 CC trafficking, for modulating expression of cell-surface markers and for
 CC inhibiting secretion from cells. The invention is also useful for
 CC treating Prion disease, Alzheimer' disease and wide range of disorders
 CC including muscle spasms such as blephorospasm, torticollis and
 CC hypersecretion disorders such as chronic obstructive pulmonary disease
 CC (COPD), bronchitis and asthma. The present sequence is a fusion construct
 CC comprising Corynebacterium diphtheriae diphtheria toxin translocation
 CC domain (Dip-HN domain) and botulinum type F neurotoxin from Clostridium
 CC botulinum. This sequence is used in the exemplification of the invention.
 CC (Updated on 23-OCT-2003 to standardise OS field)
 XX
 SQ Sequence 645 AA;

Query Match 100.0%; Score 757; DB 6; Length 645;
 Best Local Similarity 100.0%; Pred. No. 3e-70;
 Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 NIFSNTRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60
 Db 503 NIFSNTRLTYGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 562

QY 61 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHNNLVASSWYNNI 120
 Db 563 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHNNLVASSWYNNI 622

QY 121 RNTSSNGCFWSPFSKEHGQEN 143

Db 623 RNTSSNGCFWSPFSKEHGQEN 645

RESULT 7

AAE35693

ID AAE35693 standard; protein; 657 AA.

AC AAE35693;

17-JUN-2003 (first entry)

BoNT/F-Hc-Dipt HN domain-thrombin linker fusion construct.

Apoptosis; therapy; inflammatory mediator; intracellular trafficking;
 infection; Prion disease; Alzheimer' disease; hypersecretion disorder;
 muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;
 torticollis; blephorospasm; asthma; fusion protein; diphtheria toxin;
 BoNT/F; translocation domain; HN domain; Dipt; Hc; binding domain;
 botulinum type F neurotoxin.

Corynebacterium diphtheriae.

Clostridium botulinum.

Unidentified.

Chimeric.

WO200296467-A2.

05-DEC-2002.

21-MAY-2002; 2002WO-GB002384.

24-MAY-2001; 2001GB-00012687.

(MICR-) MICROBIOLOGICAL RES AUTHORITY.

Sutton JM, Shone CC;

WPI; 2003-167247/16.

Conjugate for modulating cell survival and cell growth, modulating
 release of inflammatory mediator from cells, comprises injected bacterial
 effector protein and a carrier that targets the protein to target cell.

XX PD 16-AUG-2001.
XX PF 04-DEC-2000; 2000WO-GB004644.
XX PR 02-DEC-1999; 99GB-00028530.
XX PR 07-APR-2000; 2000GB-00008658.
XX PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
XX PI Shone CC, Sutton JM, Silman N;
XX DR WPI; 2001-514643/56.
XX PT New non toxic polypeptide for delivery of a therapeutic agent for the
XX PT treatment of a CNS disorder comprising a binding domain that translocates
XX PT the therapeutic agent into the neuronal cells.
XX PS Example 9; Page 43; 50pp; English.
XX CC The invention relates to a non toxic polypeptide, for delivery of a
XX CC therapeutic agent to a neuronal cell, which comprises a binding domain
XX CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
XX CC HC) that binds to the neuronal cell and a translocation domain (amino
XX CC terminal half of HC, designated as HN), that translocates the therapeutic
XX CC agent into the neuronal cell, where the translocation domain is not a HN
XX CC domain of a clostridial neurotoxin and is not a fragment or derivative of
XX CC a HN domain of a clostridial toxin. Polypeptides of the invention are
XX CC useful for the treatment of a disease state associated with neuronal
XX CC cells. The polypeptide constructs are useful for delivering therapeutic
XX CC substances to neuronal cells. They are useful for treating disorders of the
XX CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
XX CC and infection. They are also useful in gene therapy. The present sequence
XX CC is a modified clostridial heavy chain-superoxide dismutase conjugate. This
XX CC conjugate comprises bacterial Mn-superoxide dismutase (MnSOD), from
XX CC Bacillus stearothermophilus, linker that can be cleaved by factor Xa,
XX CC translocation peptide from influenza virus and a neuronal cell-specific
XX CC binding domain from botulinum neurotoxin type F (BoNT/F)
XX SQ Sequence 685 AA;
Query Match 100.0%; Score 757; DB 4; Length 685;
Best Local Similarity 100.0%; Pred. No. 3.3e-70;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 NIFSNTRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDREVRLVADISIAPKE 60
Db 543 NIFSNTRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDREVRLVADISIAPKE 602
QY 61 KIIKLIRTSNNSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 603 KIIKLIRTSNNSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 662
QY 121 RNTSSNGCFWSFISKEHGWOEN 143
Db 663 RNTSSNGCFWSFISKEHGWOEN 685
RESULT 10
AAE07890
ID AAE07890 standard; protein; 862 AA.
XX AAE07890;
XX AC AAE07890;
XX DT 01-NOV-2001 (first entry)
XX DE Modified clostridial heavy chain-superoxide dismutase conjugate #2.
XX KW Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
XX KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;
XX KW superoxide dismutase; SOD; diphtheria neurotoxin;
XX KW botulinum neurotoxin type F; BoNT/F.
XX

OS Geobacillus stearothermophilus.
OS Corynebacterium diphtheriae.
OS Clostridium botulinum.
OS Synthetic.
OS Chimeric.
XX PN WO200158936-A2.
XX PD 16-AUG-2001.
XX PF 04-DEC-2000; 2000WO-GB004644.
XX PR 02-DEC-1999; 99GB-00028530.
XX PR 07-APR-2000; 2000GB-00008658.
XX PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
XX PI Shone CC, Sutton JM, Silman N;
XX DR WPI; 2001-514643/56.
XX PT New non toxic polypeptide for delivery of a therapeutic agent for the
XX PT treatment of a CNS disorder comprising a binding domain that translocates
XX PT the therapeutic agent into the neuronal cells.
XX PS Example 9; Page 40; 50pp; English.
XX CC The invention relates to a non toxic polypeptide, for delivery of a
XX CC therapeutic agent to a neuronal cell, which comprises a binding domain
XX CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
XX CC HC) that binds to the neuronal cell and a translocation domain (amino
XX CC terminal half of HC, designated as HN), that translocates the therapeutic
XX CC agent into the neuronal cell, where the translocation domain is not a HN
XX CC domain of a clostridial neurotoxin and is not a fragment or derivative of
XX CC a HN domain of a clostridial toxin. Polypeptides of the invention are
XX CC useful for the treatment of a disease state associated with neuronal
XX CC cells. The polypeptide constructs are useful for delivering therapeutic
XX CC substances to neuronal cells. They are useful for treating disorders of the
XX CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
XX CC and infection. They are also useful in gene therapy. The present sequence
XX CC is a modified clostridial heavy chain-superoxide dismutase conjugate. This
XX CC conjugate comprises bacterial Mn-superoxide dismutase (MnSOD), from
XX CC Bacillus stearothermophilus, linker that can be cleaved by factor Xa,
XX CC translocation domain from diphtheria neurotoxin and a neuronal cell-
XX CC specific binding domain from botulinum neurotoxin type F (BoNT/F)
XX SQ Sequence 862 AA;
Query Match 100.0%; Score 757; DB 4; Length 862;
Best Local Similarity 100.0%; Pred. No. 4.4e-70;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 NIFSNTRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDREVRLVADISIAPKE 60
Db 720 NIFSNTRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDREVRLVADISIAPKE 779
QY 61 KIIKLIRTSNNSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 780 KIIKLIRTSNNSLQGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 839
QY 121 RNTSSNGCFWSFISKEHGWOEN 143
Db 840 RNTSSNGCFWSFISKEHGWOEN 862
RESULT 11
AAE07892
ID AAE07892 standard; protein; 887 AA.
XX AAE07892;
XX AC AAE07892;
XX DT 01-NOV-2001 (first entry)
XX

DE Modified clostridial heavy chain-superoxide dismutase conjugate #4.

XX Neuronal cell; binding domain; translocation domain; stroke; epilepsy;

KW tumour; infection; neurodegenerative disease; gene therapy; chimeric;

KW superoxide dismutase; SOD; diphtheria neurotoxin; human;

KW botulinum neurotoxin type F; BoNT/F.

XX Homo sapiens.

OS Geobacillus stearothermophilus.

OS Corynebacterium diphtheriae.

OS Clostridium botulinum.

OS Synthetic.

OS Chimeric.

XX WO200158936-A2.

XX 16-AUG-2001.

XX 04-DEC-2000; 2000WO-GB004644.

XX 02-DEC-1999; 99GB-00028530.

PR 07-APR-2000; 2000GB-00008658.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Shone CC, Sutton JM, Silman N;

XX WPI; 2001-514643/56.

DR New non toxic polypeptide for delivery of a therapeutic agent for the

XX treatment of a CNS disorder comprising a binding domain that translocates

PT the therapeutic agent into the neuronal cells.

XX Example 9; Page 42; 50pp; English.

XX The invention relates to a non toxic polypeptide, for delivery of a

CC therapeutic agent to a neuronal cell, which comprises a binding domain

CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as

CC HC) that binds to the neuronal cell and a translocation domain (amino

CC terminal half of HC, designated as HN), that translocates the therapeutic

CC agent into the neuronal cell, where the translocation domain is not a HN

CC domain of a clostridial neurotoxin and is not a fragment or derivative of

CC a HN domain of a clostridial toxin. Polypeptides of the invention are

CC useful for the treatment of a disease state associated with neuronal

CC cells. The polypeptide constructs are useful for delivering therapeutic

CC substances to neuronal cells. They are useful to treat disorders of the

CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours

CC and infection. They are also useful in gene therapy. The present sequence

CC is modified clostridial heavy chain-superoxide dismutase conjugate. This

CC conjugate comprises a mitochondrial leader sequence from human Mn-

CC superoxide dismutase (MnSOD), MnSOD from Bacillus stearothermophilus,

CC linker that can be cleaved by thrombin, translocation domain from

CC diphtheria neurotoxin and a neuronal cell-specific binding domain from

CC botulinum neurotoxin type F (BoNT/F)

XX Sequence 887 AA;

SQ

Query Match 100.0%; Score 757; DB 4; Length 887;

Best Local Similarity 100.0%; Pred. No. 4.6e-70;

Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 NIFSNTRLTYGVEVIRKNGSTDINTDNFVRKNDLAYINVVDREVRLYADISIAKPE 60

Db 745 NIFSNTRLTYGVEVIRKNGSTDINTDNFVRKNDLAYINVVDREVRLYADISIAKPE 804

QY 61 KIILKIRTSNNSLGGIIVMDSIGNNCTMNFQNNNGNIGLGFHNSNLVASSYYNNI 120

Db 805 KIILKIRTSNNSLGGIIVMDSIGNNCTMNFQNNNGNIGLGFHNSNLVASSYYNNI 864

QY 121 RKNTSSNGCFWFSFISKEHGWQEN 143

Db 865 RKNTSSNGCFWFSFISKEHGWQEN 887

RESULT 12

AAE35713

ID AAE35713 standard; protein; 979 AA.

XX

AC AAE35713;

XX

DT 17-JUN-2003 (first entry)

XX

DE BoNT/F-HC-DiPT HN domain-factor Xa linker-YoPT protein fusion construct.

XX

XX Apoptosis; therapy; inflammatory mediator; intracellular trafficking;

XX infection; Prion disease; Alzheimer disease; hypersecretion disorder;

KW muscle spasm; COPD; bronchitis; chronic obstructive pulmonary disease;

KW torticollis; blepharospasm; asthma; fusion protein; diphtheria toxin;

KW BoNT/F; translocation domain; HN domain; DiPT; HC; binding domain;

KW botulinum type F neurotoxin; targetted effector protien; YoPT.

XX

OS Corynebacterium diphtheriae.

OS Clostridium botulinum.

OS Yersinia pestis.

OS Unidentified.

OS Chimeric.

XX WO200296467-A2.

XX 05-DEC-2002.

XX 21-MAY-2002; 2002WO-GB002384.

XX 24-MAY-2001; 2001GB-00012687.

XX (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX Sutton JM, Shone CC;

XX WPI; 2003-167247/16.

DR Conjugate for modulating cell survival and cell growth, modulating

XX release of inflammatory mediator from cells, comprises injected bacterial

PT effector protein and a carrier that targets the protein to target cell.

XX Example 12; Page 110-114; 130pp; English.

XX The invention relates to a conjugate comprising an injected bacterial

CC effector protein and a carrier that targets the effector protein to a

CC target cell. Pharmaceutical composition of the invention is useful for a

CC treatment selected from promoting or inhibiting survival of cells;

CC preventing and reversing damage to cells; killing cells; promoting or

CC inhibiting the growth of cells; apoptosis; release of an inflammatory

CC mediator from cells; division of cells and treating intracellular

CC infection and regulating nitric oxide release from cells. The invention

CC is useful in the manufacture of a medicament for treating a neuronal

CC cell, for intracellular infection, for interfering with intracellular

CC trafficking, for modulating expression of cell-surface markers and for

CC inhibiting secretion from cells. The invention is also useful for

CC treating Prion disease, Alzheimer disease and wide range of disorders

CC including muscle spasms such as blepharospasm, torticollis and

CC hypersecretion disorders such as chronic obstructive pulmonary disease

CC (COPD), bronchitis and asthma. The present sequence is a fusion construct

CC comprising Corynebacterium diphtheriae diphtheria toxin translocation

CC domain (DiPT-HN domain), botulinum type F neurotoxin binding domain

CC (BoNT/F-HC) from Clostridium botulinum and factor Xa linker peptide and

CC Yersinia pestis targetted effector protein YoPT. This sequence is used in

CC the exemplification of the invention

XX Sequence 979 AA;

Query Match 100.0%; Score 757; DB 6; Length 979;

Best Local Similarity 100.0%; Pred. No. 5.2e-70;

Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 NIFSNTRLTYGVEVIRKNGSTDINTDNFVRKNDLAYINVVDREVRLYADISIAKPE 60

Db 837 NIFSNTLYTGVETIRKNGSTDISTDNFVRKNDLAYINVVDREYRLYADISIAKPE 896
 QY 61 KIIKLRTSNNSNLGQIIIVMDSIGNNCTWNFQNNNGNIGLGFHSNNLVASSWYNNI 120
 Db 897 KIIKLRTSNNSNLGQIIIVMDSIGNNCTWNFQNNNGNIGLGFHSNNLVASSWYNNI 956
 QY 121 RKTSSNGCFWFSFISKEHGQEN 143
 Db 957 RKTSSNGCFWFSFISKEHGQEN 979

RESULT 13
 AAE07901
 ID AAE07901 standard; protein; 1032 AA.
 AC AAE07901;

DT 01-NOV-2001 (first entry)
 XX C. botulinum C2 translocation domain with BoNT/F-binding domain #2.
 DE
 KW Neuronal cell; binding domain; translocation domain; stroke; epilepsy;
 KW tumour; infection; neurodegenerative disease; gene therapy;
 KW botulinum neurotoxin type F; BoNT/F.
 XX
 OS Clostridium botulinum.
 XX
 PN WO200158936-A2.
 XX
 PD 16-AUG-2001.
 XX
 PF 04-DEC-2000; 2000WO-GB004644.
 XX
 PR 02-DEC-1999; 99GB-00028530.
 PR 07-APR-2000; 2000GB-00008658.
 XX
 PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX
 PI Shone CC, Sutton JM, Silman N;
 XX WPI; 2001-514643/56.
 DR
 XX New non toxic polypeptide for delivery of a therapeutic agent for the
 PT treatment of a CNS disorder comprising a binding domain that translocates
 PT the therapeutic agent into the neuronal cells.
 XX
 PS Example 2; Page 48; 50pp; English.
 XX

CC The invention relates to a non toxic polypeptide, for delivery of a
 CC therapeutic agent to a neuronal cell, which comprises a binding domain
 CC (carboxy terminal half of heavy chain (HC) of a neurotoxin, designated as
 CC Hc) that binds to the neuronal cell and a translocation domain (amino
 CC terminal half of HC, designated as HN), that translocates the therapeutic
 CC agent into the neuronal cell, where the translocation domain is not a HN
 CC domain of a clostridial neurotoxin and is not a fragment or derivative of
 CC a HN domain of a clostridial toxin. Polypeptides of the invention are
 CC useful for the treatment of a disease state associated with neuronal
 CC cells. The polypeptide constructs are useful for delivering therapeutic
 CC substances to neuronal cells. They are useful to treat disorders of the
 CC CNS including neurodegenerative diseases, stroke, epilepsy, brain tumours
 CC and infection. They are also useful in gene therapy. The present sequence
 CC is C. botulinum C2 enterotoxin translocation domain with botulinum
 CC neurotoxin type F (BoNT/F) binding domain used in the exemplification of
 CC the invention
 XX
 SQ Sequence 1032 AA;

Query Match 100.0%; Score 757; DB 4; Length 1032;
 Best Local Similarity 100.0%; Pred. No. 5.5e-70;
 Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 NIFSNTLYTGVETIRKNGSTDISTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60

Db 890 NIFSNTLYTGVETIRKNGSTDISTDNFVRKNDLAYINVVDREYRLYADISIAKPE 949
 QY 61 KIIKLRTSNNSNLGQIIIVMDSIGNNCTWNFQNNNGNIGLGFHSNNLVASSWYNNI 120
 Db 950 KIIKLRTSNNSNLGQIIIVMDSIGNNCTWNFQNNNGNIGLGFHSNNLVASSWYNNI 1009
 QY 121 RKTSSNGCFWFSFISKEHGQEN 143
 Db 1010 RKTSSNGCFWFSFISKEHGQEN 1032

RESULT 14
 AAY93309
 ID AAY93309 standard; protein; 1059 AA.
 XX
 AC AAY93309;

DT 04-SEP-2000 (first entry)
 XX A manganese superoxide dismutase (Mn-SOD) construct.
 DE
 KW Manganese superoxide dismutase; Mn-SOD; SOD; neuronal cell;
 KW neuronal cell targeting component; NCTC; neuronal disease;
 KW oxidative stress; ischemic stroke; trauma; Parkinson's disease;
 KW Huntington's disease; motor neurone disease;
 KW botulinum neurotoxin serotype F.
 XX
 OS Synthetic.
 OS Geobacillus stearothermophilus.
 OS Clostridium botulinum.
 XX
 PN WO2000028041-A1.
 XX
 PD 18-MAY-2000.
 XX
 PF 05-NOV-1999; 99WO-GB003699.
 XX
 PR 05-NOV-1998; 98GB-00024282.
 XX
 PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.
 XX
 PI Shone CC, Sutton JM, Hallis B, Silman N;
 XX WPI; 2000-376553/32.
 DR
 XX Novel composition, comprising superoxide dismutase linked by a cleavable
 PT linker to a neuronal cell targeting component useful for delivering
 PT superoxide dismutase to neuronal cells to treat ischemia.
 XX
 PS Disclosure; Page 48-51; 65pp; English.
 XX

CC The present sequence represents a construct of the invention, comprising
 CC a manganese superoxide dismutase (Mn-SOD) polypeptide, a linker that can
 CC be cleaved by thrombin, and a heavy chain derived from botulinum
 CC neurotoxin serotype F. The specification describes a composition for
 CC delivery of SOD to neuronal cells. The composition comprises SOD linked,
 CC by a cleavable linker, to a neuronal cell targeting component (NCTC).
 CC This component has a domain that binds to a neuronal cell and a domain
 CC that translocates the SOD of the composition into the neuronal cell.
 CC After translocation, the linker is cleaved to release the SOD. The
 CC composition is useful for treating neuronal diseases caused or augmented
 CC by oxidative stress, such as ischemic stroke, trauma, Parkinson's
 CC disease, Huntington's disease and motor neurone diseases
 XX

Query Match 100.0%; Score 757; DB 3; Length 1059;
 Best Local Similarity 100.0%; Pred. No. 5.7e-70;
 Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 NIFSNTLYTGVETIRKNGSTDISTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60

Db 917 NIFSNRLTYGVEIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 976
Qy 61 KIIKLIKRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNLLVASSWYNNI 120
Db 977 KIIKLIKRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNLLVASSWYNNI 1036
Qy 121 RKNLTSSNGCFWFSFISKEHGWOEN 143
Db 1037 RKNLTSSNGCFWFSFISKEHGWOEN 1059

RESULT 15

AA993312

ID AA993312 standard; protein; 1084 AA.

XX

AC AA993312;

XX

DT 04-SEP-2000 (first entry)

XX

DE A manganese superoxide dismutase (Mn-SOD) construct.

XX

KW Manganese superoxide dismutase; Mn-SOD; SOD; neuronal cell;

KW neuronal cell targeting component; NCTC; neuronal disease;

KW oxidative stress; ischemic stroke; trauma; Parkinson's disease;

KW Huntington's disease; motor neurone disease;

KW botulinum neurotoxin serotype F.

XX

OS Synthetic.

OS Homo sapiens.

OS Geobacillus stearothermophilus.

OS Clostridium botulinum.

XX

PN WO200028041-A1.

XX

PD 18-MAY-2000.

XX

PF 05-NOV-1999; 99WO-CB003699.

XX

PR 05-NOV-1998; 98GB-00024282.

XX

PA (MICR-) MICROBIOLOGICAL RES AUTHORITY.

XX

PI Shone CC, Sutton JM, Hallis B, Silman N;

XX

DR WPI; 2000-376553/32.

XX

PS Novel composition, comprising superoxide dismutase linked by a cleavable

XX linker to a neuronal cell targeting component useful for delivering

XX superoxide dismutase to neuronal cells to treat ischemia.

XX

PS Disclosure; Page 57-60; 65pp; English.

XX

CC The present sequence represents a construct of the invention, comprising

CC a mitochondrial leader sequence from human manganese superoxide dismutase

CC (Mn-SOD), a Bacillus stearothermophilus Mn-SOD, a linker that can be

CC cleaved by thrombin, and a heavy chain derived from botulinum neurotoxin

CC serotype F. The specification describes a composition for delivery of SOD

CC linker, to a neuronal cell targeting component (NCTC). This component has

CC a domain that binds to a neuronal cell and a domain that translocates the

CC SOD of the composition into the neuronal cell. After translocation, the

CC linker is cleaved to release the SOD. The composition is useful for

CC treating neuronal diseases caused or augmented by oxidative stress, such

CC as ischemic stroke, trauma, Parkinson's disease, Huntington's disease and

CC motor neurone diseases

XX

SQ Sequence 1084 AA;

XX

Query Match 100.0%; Score 757; DB 3; Length 1084;

Best Local Similarity 100.0%; Pred. No. 5.9e-70;

Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 NIFSNRLTYGVEIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60

Db 942 NIFSNRLTYGVEIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 1001
Qy 61 KIIKLIKRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNLLVASSWYNNI 120
Db 1002 KIIKLIKRTSNNSLSGQIIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNLLVASSWYNNI 1061
Qy 121 RKNLTSSNGCFWFSFISKEHGWOEN 143
Db 1062 RKNLTSSNGCFWFSFISKEHGWOEN 1084

Search completed: March 2, 2006, 00:38:56

Job time : 68.5139 secs

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GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:39:17 ; Search time 11.9443 Seconds
(without alignments)
1151.928 Million cell updates/sec

Title: US-08-981-087B-4
Perfect score: 757
Sequence: 1 NIFSNTRYLTGVEVIIRKNG.....TSSNGCFWFSISKEHGQEN 143

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283416 seqs, 96216763 residues

Total number of hits satisfying chosen parameters: 283416

Minimum DB seq length: 0
Maximum DB seq length: 2000000000
Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : PIR 80:*
1: Pir1:*
2: Pir2:*
3: Pir3:*
4: Pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	607	80.2	1274	2 I40813	neurotoxin type F
2	581	76.8	1268	2 S33411	botulinum neurotoxin
3	401	53.0	1252	2 S21178	botulinum neurotoxin
4	374.5	49.5	1251	2 JH0256	botulinum neurotoxin
5	306.5	40.5	1296	1 BTCLAB	botulinum neurotoxin
6	298.5	39.4	1296	2 I40645	botulinum neurotoxin
7	160	21.1	1291	2 I40631	non-proteolytic botulinum neurotoxin
8	149	19.7	1291	1 A48940	botulinum neurotoxin
9	142.5	18.8	1297	2 S33791	neurotoxin - Clostridium botulinum
10	137	18.1	1315	1 BTCLTN	neurotoxin - Clostridium botulinum
11	108	14.3	1225	2 T09057	probable protein-h
12	107.5	14.2	1222	2 A53878	type E neurotoxin
13	103.5	13.7	1276	2 S11455	botulinum neurotoxin
14	98	12.9	1139	2 S71092	UV-damaged DNA bin
15	96.5	12.7	391	2 S14577	asparagine-rich pr
16	95	12.5	297	2 S60538	envelope polypeptide
17	91.5	12.1	1140	2 S73786	hypothetical prote
18	91	12.0	947	2 T08605	hypothetical prote
19	91	12.0	987	2 A64474	hypothetical prote
20	88.5	11.7	323	1 H64130	glycosyl transferase
21	88.5	11.7	444	2 D97142	surface-layer rela
22	88.5	11.7	874	2 E97302	hypothetical prote
23	88	11.6	1390	2 T14004	trifluoromethyl
24	87.5	11.6	1256	2 S14556	asparagine-rich pr
25	86.5	11.4	419	2 T18420	hypothetical prote
26	86	11.4	1844	2 D71612	hypothetical prote
27	86	11.4	2340	2 B71704	cell surface antig
28	85.5	11.3	407	2 C45600	asparagine-rich bl
29	85.5	11.3	537	2 A23770	asparagine-rich pr

30	84.5	11.2	1650	2 T18444	hypothetical prote
31	84	11.1	505	2 T28172	hypothetical prote
32	84	11.1	4981	2 T18489	hypothetical prote
33	83.5	11.0	917	1 ACQAE	glutamate receptor
34	83.5	11.0	1064	2 S74861	hypothetical prote
35	83	11.0	469	2 C70109	hypothetical prote
36	83	11.0	684	2 D71683	proteinase II (ptr
37	82.5	10.9	338	2 AE0766	CDP-tylucose-2-epi
38	82.5	10.9	348	2 B33604	rfe protein - Sal
39	82.5	10.9	451	2 A23535	clustered asparagi
40	82.5	10.9	1119	2 T18491	hypothetical prote
41	81	10.7	240	2 B64461	hypothetical prote
42	81	10.7	419	2 S14508	asparagine-rich pr
43	81	10.7	899	2 C71608	origin recognition
44	81	10.7	1230	2 E64664	outer membrane pro
45	80.5	10.6	272	2 S23684	erythrocyte membra

ALIGNMENTS

RESULT 1

I40813
neurotoxin type F - Clostridium botulinum
C:Species: Clostridium botulinum
C>Date: 16-Aug-1996 #sequence_revision 16-Aug-1996 #text_change 09-Jul-2004
C:Accession: I40813; S48108
R:East, A.K.; Richardson, P.T.; Allaway, D.; Collins, M.D.; Roberts, T.A.; Thompson, D.E.
FEMS Microbiol. Lett. 96, 225-230, 1992
A:Title: Sequence of the gene encoding type F neurotoxin of Clostridium botulinum.
A:Reference number: 548103; MUID:94013372; PMID:8408542
A:Accession: I40813
A:Reference number: 140644
A:Status: preliminary; translated from GB/EMBL/DBJ
A:Molecule type: DNA
A:Residues: 1-1274 <RES>
A:Cross-references: UNIPROT:P30996; UNIPARC:UPI0000126B8A; GB:M92906; NID:g144866; PIDN:
R:Campbell, K.D.; Collins, M.D.; East, A.K.
J. Clin. Microbiol. 31, 2255-2262, 1993
A:Title: Gene probes for identification of the botulinum neurotoxin gene and specific id
A:Reference number: 548103; MUID:94013372; PMID:8408542
A:Accession: S48108
A:Status: preliminary; translation not shown
A:Molecule type: DNA
A:Residues: 634-1002 <CAM>
A:Cross-references: UNIPARC:UPI000016EA7B; EMBL:X70816; NID:g407788; PIDN:CAA50147.1; PI
C:Superfamily: tetanus toxin
C:Keywords: neurotoxin

Query Match	80.2%	Score 607;	DB 2;	Length 1274;
Best Local Similarity	83.1%	Pred. No. 1.9e-45;		
Matches 118;	Conservative	Mismatches 12;	Indels 4;	Gaps 2;
QY	1	NIFSNTRYLTGVEVIIRKNGSTDISNTDNFRKNDLAINVVDREYRLVADISIAKPE	60	
Db	1137	SVFLNKLKLYEGVEVIIRKNGPIDISNTDNFRKNDLAINVVDREYRLVADISIAKPE	1193	
QY	61	KILKILFTSNNSIGQIIIVMDSIGNCTMNFQNNNGNIGLGFHSHNNLVASSWYNNI	120	
Db	1194	K-EKIIRTSNLSLDSIGQIIIVMDSIGNCTMNFQNNNGNIGLGFHSHNNLVASSWYNNI	1252	
QY	121	RKNTSSNGCFWFSISKEHGQOE	142	
Db	1253	RKNTSSNGCFWFSISKEHGQOE	1274	

RESULT 2

S33411
botulinum neurotoxin type F - Clostridium barati
C:Species: Clostridium barati
C>Date: 13-Jan-1995 #sequence_revision 13-Jan-1995 #text_change 09-Jul-2004
C:Accession: S33411; S31860
R:Thompson, D.E.; Hutson, R.A.; East, A.K.; Allaway, D.; Collins, M.D.; Richardson, P.T.
FEMS Microbiol. Lett. 108, 175-182, 1993

RESULT 7

I40631

non-proteolytic botulinum neurotoxin type B precursor - Clostridium botulinum
 C/Species: Clostridium botulinum
 C/Date: 12-Aug-1996 #sequence revision 12-Aug-1996 #text_change 09-Jul-2004
 C/Accession: I40631; S48103; S48104; S36015
 R/Hudson, R.A.; Collins, M.D.; East, A.K.; Thompson, D.E.
 Curr. Microbiol. 28, 101-110, 1994
 A/Title: Nucleotide sequence of the gene coding for non-proteolytic Clostridium botulinum
 A/Reference number: I40631; MUID:94122659; PMID:7764370
 A/Accession: I40631
 A/Status: preliminary; translated from GB/EMBL/DBJ
 A/Molecule type: DNA
 A/Residues: 1-1291 <RES>
 A/Cross-references: UNIPROT:Q08077; UNIPARC:UPI000008DC86; EMBL:X71343; NID:g296148; PID
 R/Campbell, K.D.; Collins, M.D.; East, A.K.
 J. Clin. Microbiol. 31, 2255-2262, 1993
 A/Title: Gene probes for identification of the botulinum neurotoxin gene and specific id
 A/Reference number: S48103; MUID:94013372; PMID:8408542
 A/Accession: S48103
 A/Status: preliminary
 A/Molecule type: DNA
 A/Residues: 634-761, 'E', 763-841, 'M', 843, 'T', 845, 'N', 847-994 <CAM1>
 A/Cross-references: UNIPARC:UPI000008EAEF; EMBL:X70814; NID:g407778; PIDN:CAA50145.1; PI
 A/Experimental source: non-proteolytic strain 2129B (Scott)
 A/Note: the nucleotide sequence was submitted to the EMBL Data Library, January 1993
 A/Accession: S48104
 A/Status: preliminary
 A/Molecule type: DNA
 A/Residues: 634-843, 'T', 845, 'N', 847-994 <CAM2>
 A/Cross-references: UNIPARC:UPI0000087A6E; EMBL:X70819; NID:g407780; PIDN:CAA50150.1; PI
 A/Experimental source: non-proteolytic strain Eklund 2B (Colworth 29)
 C/Comment: Botulinum neurotoxin type B in these strains may possess a capable catalytic s
 C/Genetics:
 A/Gene: bont/b
 C/Superfamily: tetanus toxin
 C/Keywords: metalloprotein; neurotoxin; transmembrane protein; zinc
 F/4-41/Product: botulinum neurotoxin type B light chain #status predicted <LIGHT>
 F/442-1291/Product: botulinum neurotoxin type B heavy chain #status predicted <HVT>
 F/230,234/Binding site: zinc (His) #status predicted
 F/231/Active site: Glu #status predicted

Query Match 21.1%; Score 160; DB 2; Length 1291;
 Best Local Similarity 29.2%; Pred. No. 4.8e-06;
 Matches 47; Conservative 28; Mismatches 66; Indels 20; Gaps 6;

QY 1 NIFSNRLTYGVETIRKNGSTDISNTDNFVRKNDLAYINVVDVRYLYADISIAPKE 60
 Db 1132 NYINYVNLVYGEKFFIRRESNSQIN-DDIVRKEDYIHLDLVLHHEEVRVYAYKYPKEQE 1190
 QY 61 KIILKIRTSNGNSLQGIIVM---DSIGNNCTNMFNQNN--NGGNIGLLGFH----- 106
 Db 1191 EKLFLSIISDSNEFYKTIKEYDEQPSYSCQLFKKDESTDIGLIGHRYESGVLR 1250
 QY 107 ---SNLVASWYNNNI-RKNTSSN-GCFWSFISKEHGWQE 142
 Db 1251 KKYKDYFCISKWLKVKRKPKYKSNLGCNQWQFIPKDEGWT 1291

RESULT 8

A48940

bontoxilysin (EC 3.4.24.69) B precursor - Clostridium botulinum
 N/Alternate names: botulinum neurotoxin type B (Bont/B)
 C/Species: Clostridium botulinum
 C/Date: 19-Dec-1993 #sequence revision 18-Nov-1994 #text change 09-Jul-2004
 C/Accession: A48940; S48105; S21575; A42871; S07155; S08562; S07128; S08573; S08574
 R/Wheilan, S.M.; Elmore, M.J.; Bodsworth, N.J.; Brehm, J.K.; Atkinson, T.; Manton, N.P.
 Appl. Environ. Microbiol. 59, 2345-2354, 1992
 A/Title: Molecular cloning of the Clostridium botulinum structural gene encoding the typ
 A/Reference number: A48940; MUID:92384550; PMID:1514783
 A/Accession: A48940

A/Status: preliminary
 A/Molecule type: DNA
 A/Residues: 1-1291 <WHE>
 A/Cross-references: UNIPROT:P10844; UNIPARC:UPI000016EA76; GB:M81186; NID:g144734; PIDN
 A/Experimental source: type B, Danish
 A/Note: sequence extracted from NCBI backbone (NCBIN:112080, NCBIP:112081); this public
 R/Campbell, K.D.; Collins, M.D.; East, A.K.
 J. Clin. Microbiol. 31, 2255-2262, 1993
 A/Title: Gene probes for identification of the botulinum neurotoxin gene and specific id
 A/Reference number: S48103; MUID:94013372; PMID:8408542
 A/Accession: S48105
 A/Status: preliminary
 A/Molecule type: DNA
 A/Residues: 634-994 <CAM>
 A/Cross-references: UNIPARC:UPI000016EA7A; EMBL:X70817; NID:g407782; PIDN:CAA50148.1; PI
 R/Szabo, E.A.; Pemberton, J.M.; Desmarchelier, P.M.
 submitted to the EMBL Data Library, April 1992
 A/Description: Partial amino acid sequence of botulinum neurotoxin type B and comparis
 A/Reference number: S21575
 A/Accession: S21575
 A/Molecule type: DNA
 A/Residues: 36-217, 'G', 219-224, 'S', 226-246 <SZA>
 A/Cross-references: UNIPARC:UPI000016EA79; EMBL:Z11934; NID:g40383; PIDN:CAA77991.1; PI
 R/Kurazono, H.; Mochida, S.; Binz, T.; Eisel, U.; Quanz, M.; Grebenstein, O.; Wernars, K
 J. Biol. Chem. 267, 14721-14729, 1992
 A/Title: Minimal essential domains specifying toxicity of the light chains of tetanus to
 A/Reference number: A42871; MUID:92340509; PMID:1634516
 A/Accession: A42871
 A/Status: nucleic acid sequence not shown
 A/Molecule type: mRNA
 A/Residues: 1-313, 'S', 315-451 <KUR>
 A/Cross-references: UNIPARC:UPI000008B3742
 A/Experimental source: strain Okra
 A/Note: sequence extracted from NCBI backbone (NCBIP:109365)
 R/DasGupta, B.R.; Datta, A.
 Biochimie 70, 811-817, 1988
 A/Title: Botulinum neurotoxin type B (strain 657): partial sequence and similarity with
 A/Reference number: S07155; MUID:89000987; PMID:3139097
 A/Accession: S07155
 A/Molecule type: protein
 A/Residues: 2-29, 'M', 31-45 <DAS>
 A/Cross-references: UNIPARC:UPI0000173650
 A/Accession: S08562
 A/Molecule type: protein
 A/Residues: 442-463, 'R', 465-467 <DA2>
 A/Cross-references: UNIPARC:UPI0000173650
 R/Schmidt, J.J.; Sathymoorthy, V.; DasGupta, B.R.
 Arch. Biochem. Biophys. 238, 544-548, 1985
 A/Title: Partial amino acid sequences of botulinum neurotoxins types B and E.
 A/Reference number: S07128; MUID:85197963; PMID:3888113
 A/Accession: S07128
 A/Status: preliminary
 A/Molecule type: protein
 A/Residues: 2-16 <SCH1>
 A/Cross-references: UNIPARC:UPI0000173652
 A/Accession: S08573
 A/Status: preliminary
 A/Molecule type: protein
 A/Residues: 2-17 <SCH2>
 A/Cross-references: UNIPARC:UPI0000173652
 A/Accession: S08574
 A/Status: preliminary
 A/Molecule type: protein
 A/Residues: 442-459 <SCH3>
 R/Schiavo, G.; Benfenati, F.; Poullain, B.; Rossetto, O.; de Laureto, P.P.; DasGupta, B.R.
 Nature 359, 832-835, 1992
 A/Title: Tetanus and botulinum-B neurotoxins block neurotransmitter release by proteolyti
 A/Reference number: S27125; MUID:93063293; PMID:1331807
 A/Contents: annotation
 C/Comment: Botulinum neurotoxins inhibit neurotransmitter release from cholinergic synaps
 C/Genetics:

A:Gene: bont/b

A; Description: catalyzes hydrolysis of a Gln-Phe peptide bond in synaptobrevin 2
 C; Enzfam: pontc/1
 C; Superfamily: tetanus toxin
 C; Keywords: hydrolase; metalloproteinase; neurotoxin; transmembrane protein; zinc
 P; 2-441/Product: pontoxilysin B light chain [status experimental <LIGHT>
 P; 442-1291/Product: pontoxilysin B heavy chain [status experimental <HV>
 F; 230-234/Binding site: zinc (His) [status predicted
 F; 231/Active site: Glu [status predicted

Query Match	19.78;	Score 149;	DB 1;	Length 1291;
Best Local Similarity	26.69;	Pred. No. 4.5e-05;		
Matches 41; Conservative	28;	Mismatches 65;	Indels 20;	Gaps 5;
Qy	8	LYTGVEVIRKNGSTDISNTDNFVRKNDLAYINVDSDVEYRLVADISIAKPEKIILIR	67	
Db	1139	LYTGEKFLIRKNSQSQIN--DDIVRKEDYIYLDFNLNQEWRYTYKYFKKESEKFLAP	1197	
Qy	68	TSNSNNSLQGIIVN---DSICNNCTNMFNQN--NGGNIIGLLGFH-----SNNL	110	
Db	1198	ISDSDFNTIQIKEYDEQPTYSQCLLFKKDBESTDEIGLIHRFVESGIVFEFYKDYF	1257	
Qy	111	VASSWYNNIRKN--TSSNGCFWFSFISKEHWQE	142	
Db	1258	CISKWYIKVKRKFPYNIKIGCNWOFIPKDSGWT	1291	

RESULT 9

neurotoxin - Clostridium botulinum
 C:Species: Clostridium botulinum
 C:Date: 07-Oct-1994 #sequence_revision 01-Dec-1995 #text_change 16-Jul-1999
 C:Accession: S39791
 R:Campbell, K.; Collins, M.D.; East, A.K.
 Biochim. Biophys. Acta 1216, 487-491, 1993
 A:Title: Nucleotide sequence of the gene coding for Clostridium botulinum (Clostridium a
 A:Reference number: S39791; MUID:94092745; PMID:8268233
 A:Accession: S39791
 A:Status: preliminary
 A:Molecule type: DNA
 A:Residues: 1-1297 <AM>
 A:Cross-references: UNIPARC:UPT0000176706; EMBL:X74162; NID:g441275; PIDN:CAA52275.1; PI
 C:Superfamily: tetanus toxin
 C:Keywords: neurotoxin

Query Match	18.8%;	Score 142.5;	DB 2;	Length 1297;
Best Local Similarity	25.6%;	pred. No. 0.00017;		
Matches 42:	Conservative	25;	Mismatches 72;	Indels 25;
	Gaps			6;

[illegible]

RESULT 10

tentoxilysin (EC 3.4.24.68) precursor - Clostridium tetani
 N:Alternate names: tetanus neurotoxin
 C:Species: Clostridium tetani
 C:Date: 31-Mar-1988 #sequence revision 31-Mar-1988 #text change 09-Jul-2004
 C:Accession: A25689; A25757; A25194; B25194; A60759; S69348; S09364
 R:Eisele, U.; Jarausch, W.; Goretzki, K.; Henschen, A.; Engels, J.; Weller, U.; Hudel, M.
 ENBO J. 5, 2495-2502, 1986
 A:Title: Tetanus toxin: primary structure, expression in *E. coli*, and homology with botu
 A:Reference number: A25689; MUID:87053814; PMID:3536478

Db 1163 NIYYR-RLYNGLEFIKR--YTPNNEIDSFVXSGDF-----IKLY--VSNNNE 1206
Qy 61 KIILRTSNNNSLGOIIVMSIGNNC-----TNFQNNNGG 98
Db 1207 HIYGPKNAGFAFNLDRIIL---RVGYNAPGIPLYKKMEAVKLRDLKTSVQLKLYDDKNA 1263
Qy 99 NIGLGFHSHNN-----LVASSWYNNIRKNTSSNGCFWFSFISKEHG 140
Db 1264 SLGLVTHNGOIGNDPNDRIILASNYFNHLKXIL--GCDWYFVPTDEGW 1312

RESULT 11

T09057
Probable protein-histidine kinase (EC 2.7.3.-) Dhkc - slime mold (Dictyostelium discoideum)
N;Alternate names: histidine kinase C
C;Species: Dictyostelium discoideum
C;Date: 11-Jun-1999 #sequence_revision 11-Jun-1999 #text_change 09-Jul-2004
C;Accession: T09057
R;Singleton, C.K.; Mykytka, B.; Zinda, M.
submitted to the EMBL Data Library, October 1997
A;Reference number: Z16542
A;Accession: T09057
A;Status: preliminary; translated from GB/EMBL/DBJ
A;Molecule type: mRNA
A;Residues: 1-1225 <SIN>
A;Cross-references: UNIPROT:O15784; UNIPARC:UPI000007678C; EMBL:AF029726; NID:G2605923;
C;Genetics:
A;Gene: dhkc
A;Map position: 4
C;Keywords: phosphotransferase; protein kinase

Query Match 14.3%; Score 108; DB 2; Length 1225;
Best Local Similarity 30.1%; Pred. No. 0.17;
Matches 43; Conservative 18; Mismatches 42; Indels 40; Gaps 7;
Qy 5 NTRYTGVEVII-----RNGSTD-----ISNTDN-FVRKNDLAYINVVDREYRL 50
Db 12 STLFETIISILFYFNNKKNLIDOCQEVTKLNKKONKIVNNNNNNNNNNFNKIE--- 68
Qy 51 YADISTAKPEKIILRTSNNNSLGOIIVMSIGNNCCTMNFQNNNGNIGLLGFHSHNL 110
Db 69 --EINDOKKEIILKLNNSNNKLNKIKIQEIDS-GNNNNNNNNNNNN----- 114
Qy 111 VASSWYNNIRKNTSSNGCFWFSF 133
Db 115 -----NNLNKN--SNEIFRNF 128

RESULT 12

A53878
Type E neurotoxin - Clostridium botulinum (fragments)
C;Species: Clostridium botulinum
C;Date: 27-Sep-1994 #sequence_revision 18-Nov-1994 #text_change 31-Dec-2004
C;Accession: A53878
R;Gimenez, J.A.; DasGupta, B.R.
J. Protein Chem. 11, 255-264, 1992
A;Title: Peptin fragmentation of botulinum type E neurotoxin: isolation and characterization
A;Reference number: A53878; MUID:93000392; PMID:1388670
A;Contents: type E, E-43, Alaska
A;Accession: A53878
A;Status: preliminary
A;Molecule type: protein
A;Residues: 1-122 <GIN>
A;Cross-references: UNIPROT:Q9R5H0; UNIPARC:UPI000017670E
A;Note: sequence modified after extraction from NCBI backbone
A;Note: sequence extracted from NCBI backbone (NCBIP:115403, NCBIP:115404)
C;Keywords: neurotoxin

Query Match 14.2%; Score 107.5; DB 2; Length 122;
Best Local Similarity 45.9%; Pred. No. 0.013;
Matches 28; Conservative 9; Mismatches 17; Indels 7; Gaps 3;

Qy 7 RLYTGVEVIIRK--NGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPEKI 63
Db 66 RLYSGIKVKIQRVNSSTN-----DNLVRKNDQVTINFAVKTHLFLPLYADTATTNKEKXI 121
Qy 64 K 64
Db 122 K 122

RESULT 13

S11455
botulinum neurotoxin type D - Clostridium botulinum
C;Species: Clostridium botulinum
C;Date: 18-Feb-1994 #sequence_revision 10-Nov-1995 #text_change 09-Jul-2004
C;Accession: S11455
R;Binz, T.; Kurazono, H.; Popoff, M.R.; Eklund, M.W.; Sakaguchi, G.; Kozaki, S.; Kriegler
Nucleic Acids Res. 18, 5556, 1990
A;Title: Nucleotide sequence of the gene encoding Clostridium botulinum neurotoxin type D
A;Reference number: S11455; MUID:91016853; PMID:2216736
A;Accession: S11455
A;Status: preliminary; translation not shown
A;Molecule type: DNA
A;Residues: 1-1276 <BIN>
A;Cross-references: UNIPROT:P19321; UNIPARC:UPI0000126B83; EMBL:X54254; NID:G40395; PIDN
C;Superfamily: tetanus toxin
C;Keywords: neurotoxin

Query Match 13.7%; Score 103.5; DB 2; Length 1276;
Best Local Similarity 21.9%; Pred. No. 0.46;
Matches 40; Conservative 22; Mismatches 42; Indels 79; Gaps 7;
Qy 6 TRYTGVEVIIR-----KNGSTDISNTDNFVRK---NDLAYINVVDREYRLYADISIAK 58
Db 1127 SKLYTGNPTIKSVSDKPNYPYSLNGDNLILHMLYNSRKYMIIRDTPD---IYA----- 1177
Qy 59 PEKILILRTSNNNSLGOIIVMSIGNNCCTMNF-----QNNNGENIGLLGFHSHNLVAS 113
Db 1178 -----TQGCESQNCVYALKQSNLGNYGIGIFSINKIVSK 1213
Qy 114 SWY-----YNNIRKNTS-----SNGCFWFSFISKEHG 139
Db 1214 NKYCSQIFSSFRNTMLLADIYKPRFSKMYTPVAVTNYETKLLSTSSFWKFI SRDPG 1273
Qy 140 WQE 142
Db 1274 WVE 1276

RESULT 14

S71092
UV-damaged DNA binding protein repE - slime mold (Dictyostelium discoideum)
C;Species: Dictyostelium discoideum
C;Date: 14-Feb-1997 #sequence_revision 13-Mar-1997 #text_change 09-Jul-2004
C;Accession: S71092; S21443
R;Alexander, H.; Lee, S.K.; Yu, S.L.; Alexander, S.
Nucleic Acids Res. 24, 2295-2301, 1996
A;Title: repE-The Dictyostelium homolog of the human xeroderma pigmentosum group E gene
A;Reference number: S71092; MUID:96279729; PMID:8710499
A;Accession: S71092
A;Status: preliminary; nucleic acid sequence not shown
A;Molecule type: DNA
A;Residues: 1-1139 <ALE>
A;Cross-references: UNIPROT:Q23865; UNIPARC:UPI000008121P; EMBL:U50042; NID:G1399511; PII
R;Sydow, L.; Alexander, H.; Alexander, S.
submitted to the EMBL Data Library, April 1992
A;Reference number: S21443
A;Accession: S21443
A;Molecule type: mRNA
A;Residues: 860-1139 <SYD>
A;Cross-references: UNIPARC:UPI0000177223; EMBL:X65937
C;Genetics:
A;Gene: repE
A;Introns: 654/2

Job time : 12.9443 secs

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GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:32:07 ; Search time 73.3248 Seconds
(without alignments)
1375.940 Million cell updates/sec

Title: US-08-981-087B-4
Perfect score: 757
Sequence: 1 NIPSNTRYLTGVEVIRKNG.....TSSNGCFWFSFKSHGWQEN 143

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 2166443 seqs, 705528306 residues

Total number of hits satisfying chosen parameters: 2166443

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : UniProt_05.80.*
1: uniprot_sprot.*
2: uniprot_trembl.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	757	100.0	1278	2	Q57236 CLOBO
2	639	84.4	1280	2	Q92AJ5 CLOBO
3	607	80.2	1274	1	BXE CLOBO
4	581	76.8	1268	2	Q45851 CLOBO
5	417.5	55.2	1251	2	Q9K395 CLOBO
6	401	53.0	1252	2	Q5A479 CLOBO
7	391	51.7	1252	2	Q8KZM3 CLOBO
8	391	51.7	1255	2	Q9FAR6 CLOBO
9	384.5	50.8	1250	1	BXE CLOBO
10	374.5	49.5	1250	1	BXE CLOBO
11	306.5	40.5	1295	1	BXA1 CLOBO
12	306.5	40.5	1296	2	Q7B8V4 CLOBO
13	298.5	39.4	1295	1	BXA2 CLOBO
14	298.5	39.4	1296	2	Q5SGH1 CLOBO
15	188	24.8	77	2	Q6Q798 CLOBO
16	165	21.8	77	2	Q6Q797 CLOBO
17	163	21.5	1291	2	Q8GR96 CLOBO
18	160	21.1	1291	2	Q80077 CLOBO
19	154	20.3	1291	2	Q933K0 CLOBO
20	154	20.3	1291	2	Q93G71 CLOBO
21	154	20.3	1291	2	Q92AJ8 CLOBO
22	149	19.7	1290	1	BXB CLOBO
23	142.5	18.6	1296	1	BXG CLOBO
24	141	18.6	451	2	Q9LA13 CLOTE
25	139	18.4	441	1	Q9X708 CLOBO
26	137	18.1	1314	1	TEXX CLOTE
27	131.5	17.4	72	2	Q9R540 CLOBO
28	124	16.4	1310	2	Q93N27 CLOTE
29	112.5	14.9	1643	2	Q7RNL6 PLAYO
30	108	14.3	1235	2	O15784 D1C1
31	108	14.3	1225	2	Q95P12 D1C1

32	107.5	14.2	60	2	Q9R5H0 CLOBO
33	107.5	14.2	1089	2	Q7PDP6 PLAYO
34	105.5	13.9	926	2	Q7RE38 PLAYO
35	104	13.7	3933	2	Q97239 PLAYO
36	103.5	13.7	854	2	Q6TAN6 9H1V1
37	103.5	13.7	1276	1	BXD CLOBO
38	103	13.6	1145	2	Q9U0J0 PLAF7
39	103	13.6	1205	2	Q81EH4 PLAF7
40	102.5	13.5	2723	2	Q815X3 PLAF7
41	102	13.5	1450	2	Q4Y9B4 PLABE
42	101.5	13.4	330	2	Q7RCT9 PLAYO
43	101.5	13.4	758	2	Q81AY2 PLAF7
44	101.5	13.4	915	2	Q812L0 PLAF7
45	101.5	13.4	2053	2	Q869L1 D1C1

ALIGNMENTS

RESULT 1
Q57236 CLOBO PRELIMINARY; PRT; 1278 AA.
AC Q57236; Q45863;
DT 01-NOV-1996 (TREMBlrel. 01, Created)
DT 01-NOV-1996 (TREMBlrel. 01, Last sequence update)
DT 01-FEB-2005 (TREMBlrel. 29, Last annotation update)
DE BONT/F (Neurotoxin type F).
GN Name=bont/f; Synonyms=bont/F;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=NCTC 10281;
RA Hutson R.A.; Collins M.D.;
RL Submitted (SBP-1994) to the EMBL/GenBank/DBJ databases.
RN [2]
RP NUCLEOTIDE SEQUENCE.
RA Elmore M.J.; Bodsworth N.J.; Whelan S.M.; Minton N.P.;
RL Submitted (AUG-1994) to the EMBL/GenBank/DBJ databases.
DR EMBL; X81714; CAA57358.1; -; Genomic_DNA.
DR EMBL; L35496; AAA23210.1; -; Genomic_DNA.
DR PIR; S48110; S48110.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27.002; -;
DR GO; GO:0016021; C: integral to membrane; IEA.
DR GO; GO:0008237; F: metalloproteinase activity; IEA.
DR GO; GO:0009405; P: pathogenesis; IEA.
DR GO; GO:0006508; P: proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR006025; Pept_M27_BS.
DR Pfam; PF01742; Peptidase M27; 1.
DR PRINTS; PR00760; BONTOKILYSIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN_1.
DR Neurotoxin.
SQ SEQUENCE 1278 AA; 147073 MW; A1BE1318431D6918 CRC64;

Query Match	100.0%;	Score 757;	DB 2;	Length 1278;
Best Local Similarity	100.0%;	Pred. No. 7.2e-58;		
Matches 143;	Conservative 0;	Mismatches 0;	Indels 0;	Gaps 0;
QY	1	NIPSNTRYLTGVEVIRKNGSTDINTDNFRKNDLAYINVVDREVELYADISIAKPE 60		
Db	1136	NIPSNTRYLTGVEVIRKNGSTDINTDNFRKNDLAYINVVDREVELYADISIAKPE 1195		
QY	61	KIKIKLRTSNNSNLSGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHNNLVASSWYNNI 120		
Db	1196	KIKIKLRTSNNSNLSGQIIVMDSIGNNCTMNFQNNNGNIGLLGFHNNLVASSWYNNI 1255		
QY	121	RKNTSSNGCFWFSFKSHGWQEN 143		

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Db      1256 RKTSSNGCFWSPFSKEHGQEN 1278
|||||
RESULT 2
Q9ZAJ5_CLOBO
ID Q9ZAJ5_CLOBO PRELIMINARY; PRT; 1280 AA.
AC Q9ZAJ5
DT 01-MAY-1999 (T-EMBLrel. 10, Created)
DT 01-MAY-1999 (T-EMBLrel. 10, Last sequence update)
DT 01-MAR-2004 (T-EMBLrel. 26, Last annotation update)
DE Bont protein.
GN Name=Bont;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=CDC 3281;
RX MEDLINE=98440323; PubMed=9767710; DOI=10.1007/s002849900384;
RA Santos-Buelga J., Collins M.D., East A.K.;
RT "Characterization of the genes encoding the Botulinum neurotoxin
RT complex in a strain of clostridium botulinum producing type B & F
RT neurotoxins.";
RL Curr. Microbiol. 37:312-318(1998).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=CDC 3281;
RX Santos-Buelga J.A.;
RL Submitted (JUN-1997) to the EMBL/GenBank/DBJ databases.
DR EMBL; Y13631; CAA73972.1; -, Genomic_DNA.
DR HSSP; Q45894; 1E1H.
DR MEROPS; M27.002; -.
DR GO; GO:0016024; C:integral to membrane; IEA.
DR GO; GO:0008237; F:metalloproteinase activity; IEA.
DR GO; GO:0009405; P:pathogenesis; IEA.
DR GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum
DR InterPro; IPR000395; Peptidase_M27.
DR InterPro; IPR006025; Pept_M_Zn_BS.
DR Pfam; PF01742; Peptidase_M27; 1.
DR PRINTS; PR00760; BONTXILYSIN.
DR ProDom; PD001363; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
SQ SEQUENCE 1280 AA; 147486 MW; D0F748976EBC222C CRC64;

Query Match      84.4%; Score 639; DB 2; Length 1280;
Best Local Similarity 84.5%; Pred. No. 1.9e-47;
Matches 120; Conservative 10; Mismatches 12; Indels 0; Gaps 0;

QY      1 NIFSTRLTYGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVLYADISIAPKE 60
Db      1139 SVFLNKLKLYEGVEVIIRKNAIDISNTDNFVRKNDLAYINVVDHGVEVLYADISITKSE 1198

QY      61 KIIKLIRTSNNNSLGGIIVMDSIGNNCTMNFQNNNGNIGLLGFHNSNLLVASSWYNNI 120
Db      1199 KIIKLIRTSNPNLSLGGIIVMDSIGNNCTMNFQNNNGNIGLLGFHSDLLVASSWYNNHI 1258

QY      121 RKTSSNGCFWSPFSKEHGQEF 142
Db      1259 RRTSSNGCFWSPFSKEHGKWE 1280

RESULT 3
BXF_CLOBO
ID BXF_CLOBO STANDARD; PRT; 1274 AA.
AC P30596;
DT 01-JUL-1993 (Rel. 26, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type F precursor (EC 3.4.24.69) (Bont/F)
DE (Bontoxilysin F) [Contains: Botulinum neurotoxin F light chain;

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DE Botulinum neurotoxin F heavy chain].
GN Name=botF;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type F / ATCC 23387;
RX MEDLINE=93012902; PubMed=1398040; DOI=10.1016/0378-1097(92)90408-G;
RA East A.K., Richardson P.T., Allaway D., Collins M.D., Roberts T.A.,
RA Thompson D.E.;
RT "Sequence of the gene encoding type F neurotoxin of Clostridium
RT botulinum.";
RL FEMS Microbiol. Lett. 75:225-230(1992).
RN [2]
RP NUCLEOTIDE SEQUENCE OF 1-64.
RC STRAIN=Type F / Hobbs FT10;
RX MEDLINE=94297488; PubMed=7764998;
RA East A.K., Collins M.D.;
RT "Conserved structure of genes encoding components of botulinum
RT neurotoxin complex M and the sequence of the gene coding for the
RT nontoxic component in nonproteolytic Clostridium botulinum type F.";
RL Curr. Microbiol. 29:69-77(1994).
RN [3]
RP NUCLEOTIDE SEQUENCE OF 634-1002.
RX MEDLINE=94013372; PubMed=8408542;
RA Campbell K.D., Collins M.D., East A.K.;
RT "Gene probes for identification of the botulin neurotoxin gene and
RT specific identification of neurotoxin types B, E, and F.";
RL J. Clin. Microbiol. 31:2255-2262(1993).
RN [4]
RP IDENTIFICATION OF SUBSTRATE.
RX MEDLINE=94230352; PubMed=8175689;
RA Yamasaki S., Baumeister A., Binz T., Blasi J., Link E., Cornille F.,
RA Roques B., Fykse E.M., Suedhof T.C., Jahn R., Niemann H.;
RT "Cleavage of members of the synaptobrevin/VAMP family by types D and F
RT botulin neurotoxins and tetanus toxin.";
RL J. Biol. Chem. 269:12764-12772(1994).
CC -1- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
CC release. It binds to peripheral neuronal synapses, is internalized
CC and moves by retrograde transport up the axon into the spinal cord
CC where it can move between postsynaptic and presynaptic neurons. It
CC inhibits neurotransmitter release by acting as a zinc
CC endopeptidase that catalyzes the hydrolysis of the 58-Gln--Lys-59
CC bond of synaptobrevins-1 and -2.
CC -1- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -1- COFACTOR: Binds 1 zinc ion per subunit (by similarity).
CC -1- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H). The light chain has the pharmacological activity,
CC while the N- and C-terminal of the heavy chain mediate channel
CC formation and toxin binding, respectively.
CC -1- SUBCELLULAR LOCATION: Secreted.
CC -1- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: types A, B, C1, D, E, F, and G.
CC -1- SIMILARITY: Belongs to the peptidase M27 family.
CC
CC This Swiss-Prot entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL Outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.
CC
CC EMBL; M92906; AAA23263.1; -; Genomic DNA.
CC EMBL; S73676; AAC60475.1; -; Genomic DNA.
CC EMBL; X70820; CAA50151.1; -; Genomic DNA.
CC EMBL; X70816; CAA50147.1; -; Genomic DNA.
CC F01; I40813; I40813.
CC F01; S48109; S48109.
CC HSSP; Q45894; 1E1H.
CC MEROPS; M27.002; -.

```

DR ProDom; PD001963; Botulinum: 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN_1.
DR Neurotoxin.
SQ SEQUENCE 1268 AA; 145512 MW; 963040091AC15ED2 CRC64;

Query Match 76.8%; Score 581; DB 2; Length 1268;
Best Local Similarity 76.8%; Pred. No. 2.4e-42;
Matches 109; Conservative 11; Mismatches 22; Indels 0; Gaps 0;

QY 1 NIFSNTFLYGVGVIRKNGSTDISNTDVFVRQNDLAYINVDVDVEYRLYADISIAKPE 60
Db 1127 NIFSNTFLYGVGVIRKNGSTDISNTDVFVRQNDLAYINVDVDVEYRLYADISIAKPE 120
QY 61 KIITKLRISNSNSLGOIIVMDSIGNNCTWNFONNGNGNIGLGFHSNNLVASSWYKNI 120
Db 1187 KIITKLRISNSNSYNSQMIIMDSIGNCTWNFKNNGNDIGLGFHLNLLVASSWYKNI 1246

QY 121 RKNTSSNGCFWSPISKEHGWOE 142
Db 1247 RNTRNNGCFWSPISKEHGWOE 1268

RESULT 5
Q9K395_CLOBU PRELIMINARY; PRT; 1251 AA.
ID Q9K395_CLOBU PRELIMINARY;
AC Q9K395; AC Q9K395; (TrEMBLrel. 15, Created)
DT 01-OCT-2000 (TrEMBLrel. 15, Last sequence update)
DT 01-FEB-2005 (TrEMBLrel. 29, Last annotation update)
DE Type B botulinum toxin.
GN Name:bont/E;
OS Clostridium butyricum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1492;
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=LCL 095, LCL 155, KZ 1899, KZ 1897, KZ 1898, KZ 1886, KZ 1887,
KZ 1889, KZ 1890, KZ 1891, and LCL 063;
RX MEDLINE=20509829; PubMed=11055954;
RX DOI=10.1128/AEM.66.11.4992-4997.2000;
RA Wang X., Maegawa T., Karasawa T., Tsukamoto K., Gyobu Y.,
Yamakawa K., Oguma K., Sakaguchi Y., Nakamura S.;
RT "Genetic analysis of type E botulinum toxin-producing Clostridium
butyricum strains."
RL Appl. Environ. Microbiol. 66:4992-4997(2000).
DR EMBL; AB037714; BAB03522.1; -; Genomic DNA.
DR EMBL; AB037704; BAB03512.1; -; Genomic DNA.
DR EMBL; AB037705; BAB03513.1; -; Genomic DNA.
DR EMBL; AB037706; BAB03514.1; -; Genomic DNA.
DR EMBL; AB037710; BAB03518.1; -; Genomic DNA.
DR EMBL; AB037712; BAB03520.1; -; Genomic DNA.
DR EMBL; AB037713; BAB03521.1; -; Genomic DNA.
DR EMBL; AB037711; BAB03519.1; -; Genomic DNA.
DR EMBL; AB037709; BAB03517.1; -; Genomic DNA.
DR EMBL; AB037708; BAB03516.1; -; Genomic DNA.
DR EMBL; AB037707; BAB03515.1; -; Genomic DNA.
DR HSSP; Q45894; 1E1H.
DR SMR; Q9K395; 2-412.
DR GO; GO:0008233; P:peptidase activity; IEA.
DR GO; GO:0009405; P:pathogenesis; IEA.
DR GO; GO:0006508; P:proteolysis and peptidolysis; IEA.
DR InterPro; IPR011591; Botulinum.
DR InterPro; IPR006025; Pept M Zn BS.
DR InterPro; IPR000395; Peptidase M27.
DR InterPro; IPR012928; Toxin_recp_bd_N.
DR InterPro; IPR012500; Toxin trans.
DR Pfam; PF01742; Peptidase M27; 1.
DR Pfam; PF07953; Toxin R_bind N; 1.
DR Pfam; PF07952; Toxin trans; 1.
DR PRINTS; PR00760; BONTXILYSIN.
DR ProDom; PD001963; Botulinum: 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN_1.


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DR PRINTS; PR00760; BONTOLILYSIN.
DR ProDom; PD001963; Botulinum; 1.
DR PROSITE; PS00142; ZINC_PROTEASE; UNKNOWN 1.
SQ SEQUENCE 1255 AA; 143917 MW; 1B557B9D58CD8E4D CRC64;

Query Match
Best Local Similarity 51.7%; Score 391; DB 2; Length 1255;
Matches 77; Conservative 24; Mismatches 28; Indels 10; Gaps 4;

Qy 7 RLYTGVEVIRK--NGSTDISTNTNFRKNDLAYIN-VWDRDVEYRLYADISIAPKEKII 63
Db 1123 RLYSGIKVKIQRVNNSSTN-----DNLVRKNDQVYINFVASKTHLLPLVADTATTNKEKTI 1178

Qy 64 KLIRTSNNSISGLIIVMDSIGNNCTWNNFONNNGNIGLGFHSNNILVASSWYNNIRKN 123
Db 1179 KI-----SSNGNFRNQVNVNNSVGNCTWNNFKNNGNIGLGFKADTVVASTWYTHWRDN 1235

Qy 124 TSSNGCFWFSFKSHGWOE 142
Db 1236 TNSNGFFWNFISEHGWOE 1254

RESULT 9
BXE_CLOBO STANDARD; PRT; 1250 AA.
AC Q00496; Q45862;
DT 01-JUL-1993 (Rel. 26, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type E precursor (EC 3.4.24.69) (BONT/E)
DE (Bontolysin E) [Contains: Botulinum neurotoxin E light chain;
DE Botulinum neurotoxin E heavy chain].
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type E / Beluga;
RX MEDLINE=92181428; PubMed=1543481;
RA Poulet S., Hauser D., Quanz M., Niemann H., Popoff M.R.;
RT "Sequences of the botulin neurotoxin E derived from Clostridium
RT botulinum type E (strain Beluga) and Clostridium butyricum (strains
RT ATCC 43181 and ATCC 43755).";
RL Biochem. Biophys. Res. Commun. 183:107-113(1992).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RX MEDLINE=92174922; PubMed=1541280;
RA Whelan S.M., Elmore M.J., Bodsworth N.J., Atkinson T., Minton N.P.;
RT "The complete amino acid sequence of the Clostridium botulinum type-E
RT neurotoxin, derived by nucleotide-sequence analysis of the encoding
RT gene.";
RL Eur. J. Biochem. 204:657-667(1992).
RN [3]
RP NUCLEOTIDE SEQUENCE OF 1-251.
RX MEDLINE=90264400; PubMed=2160960;
RA Binz T., Kurazono H., Wille M., Frevert J., Wernars K., Niemann H.;
RT "The complete sequence of botulinum neurotoxin type A and comparison
RT with other clostridial neurotoxins.";
RL J. Biol. Chem. 265:9153-9158(1990).
RN [4]
RP PROTEIN SEQUENCE OF 1-13.
RX MEDLINE=85197963; PubMed=3888113;
RA Schmidt J.J., Sathyamoorthy V., Dasgupta B.R.;
RT "Partial amino acid sequences of botulinum neurotoxins types B and
RT E.";
RL Arch. Biochem. Biophys. 238:544-548(1985).
RN [5]
RP PROTEIN SEQUENCE OF 419-426.
RX MEDLINE=90344918; PubMed=2116911; DOI=10.1016/0300-9084(90)90075-R;
RA Gimenez J.A., Dasgupta B.R.;
RT "Botulinum neurotoxin type E fragmented with endoproteinase Lys-C
RT reveals the site trypsin nicks and homology with tetanus neurotoxin.";
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RL Biochimie 72:213-217(1990).
RN [6]
RP NUCLEOTIDE SEQUENCE OF 615-981.
RC STRAIN=Type E / Hazen 36208;
RX MEDLINE=94013372; PubMed=8408542;
RA Campbell K.D., Collins M.D., East A.K.;
RT "Gene probes for identification of the botulin neurotoxin gene and
RT specific identification of neurotoxin types B, E, and F.";
RL J. Clin. Microbiol. 31:2255-2262(1993).
RN [7]
RP IDENTIFICATION OF SUBSTRATE.
RX MEDLINE=94063091; PubMed=8243676; DOI=10.1016/0014-5793(93)80448-4;
RA Schiavo G., Santucci A., Dasgupta B.R., Mehta P.P., Jones J.,
RA Benfenati F., Wilson M.C., Montecucco C.;
RT "Botulinum neurotoxins serotypes A and E cleave SNAP-25 at distinct
RT COOH-terminal peptide bonds.";
RL FEBS Lett. 335:99-103(1993).
RN [8]
RP IDENTIFICATION OF SUBSTRATE.
RX MEDLINE=94124495; PubMed=8294407;
RA Binz T., Blaszi J., Yamasaki S., Baumeister A., Link E., Suedhof T.C.,
RA Jahn R., Niemann H.;
RT "Proteolysis of SNAP-25 by types E and A botulin neurotoxins.";
RL J. Biol. Chem. 269:1617-1620(1994).
CC -1- FUNCTION: Botulinum toxin acts by inhibiting neurotransmitter
CC and moves by retrograde transport up the axon into the spinal cord
CC where it can move between postsynaptic and presynaptic neurons. It
CC inhibits neurotransmitter release by acting as a zinc
CC endopeptidase that catalyzes the hydrolysis of the 180-Arg-|-Ile-
CC 181 bond in SNAP-25.
CC -1- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -1- COFACTOR: Binds 1 zinc ion per subunit (By similarity).
CC -1- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H). The light chain has the pharmacological activity,
CC while the N- and C-terminal of the heavy chain mediate channel
CC formation and toxin binding, respectively.
CC -1- SUBCELLULAR LOCATION: Secreted.
CC -1- MISCELLANEOUS: There are seven antigenically distinct forms of
CC botulinum neurotoxin: Types A, B, C1, D, E, F, and G.
CC -1- SIMILARITY: Belongs to the peptidase M27 family.
CC
CC This Swiss-Prot entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.
CC
CC EMBL; X62089; CAA43999.1; -; Genomic DNA.
CC EMBL; X62883; CAA44558.1; -; Genomic DNA.
CC EMBL; X70815; CAA50146.1; -; Genomic DNA.
CC PIR; S08575; S08575.
CC PIR; S21178; S21178.
CC PDB; 1T3A; X-ray; A/B=1-421.
CC PDB; 1T3C; X-ray; A/B=1-421.
CC MEROPS; M27.002; -.
CC InterPro; IPR011591; Botulinum.
CC InterPro; IPR006025; Pept_M_Zn_BS.
CC InterPro; IPR000395; Peptidase_M27.
CC InterPro; IPR012928; Toxin_recp_bd_N.
CC InterPro; IPR012500; Toxin_trans.
CC Pfam; PF01742; Peptidase_M27; 1.
CC Pfam; PF07953; Toxin_R_bind_N; 1.
CC Pfam; PF07952; Toxin_trans; 1.
CC PRINTS; PR00760; BONTOLILYSIN.
CC ProDom; PD001963; Botulinum; 1.
CC PROSITE; PS00142; ZINC_PROTEASE; 1.
CC 3D-structure; Direct protein sequencing; Hydrolase; Metal-binding;
CC Metalloprotease; Neurotoxin; Protease; Toxin; Transmembrane; Zinc.
FT INIT MET 0 0
FT CHAIN 1 421 Botulinum neurotoxin E light chain.
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AC P10845; P01561; P18639;
DT 01-JUL-1989 (Rel. 11, Created)
DT 01-JUL-1993 (Rel. 26, Last sequence update)
DT 13-SEP-2005 (Rel. 48, Last annotation update)
DE Botulinum neurotoxin type A precursor (EC 3.4.24.69) (BONT/A)
DE (Bontoxigenin A) (BOTOX) [Contains: Botulinum neurotoxin A light-chain; Botulinum neurotoxin A heavy-chain]
GN Name: botA; Synonyms: atx, bna;
OS Clostridium botulinum.
OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
OC Clostridium.
OX NCBI_TaxID=1491;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / NCTC 2916;
RX MEDLINE=90235864; PubMed=2185020;
RA Thompson D.E., Brehm J.K., Oultram J.D., Swinfield T.-J., Shone C.C.,
RA Atkinson T., Melling J., Minton N.P.;
RT "The complete amino acid sequence of the Clostridium botulinum type A
RT neurotoxin, deduced by nucleotide sequence analysis of the encoding
RT gene.";
RL Eur. J. Biochem. 189:73-81 (1990).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Type A / 62A;
RX MEDLINE=90264400; PubMed=2160960;
RA Binz T., Kurazono H., Wille M., Frevert J., Wernars K., Niemann H.;
RT "The complete sequence of botulinum neurotoxin type A and comparison
RT with other clostridial neurotoxins.";
RL J. Biol. Chem. 265:9153-9158 (1990).
RN [3]
RP NUCLEOTIDE SEQUENCE OF 1-65.
RC STRAIN=Type A / 62A;
RX MEDLINE=97016817; PubMed=8863443;
RA East A.K., Bhandari M., Stacey J.M., Campbell K.D., Collins M.D.;
RT "Organization and phylogenetic interrelationships of genes encoding
RT components of the botulinum toxin complex in proteolytic Clostridium
RT botulinum types A, B, and F: evidence of chimeric sequences in the
RT gene encoding the nontoxic nonhemagglutinin component.";
RL Int. J. Syst. Bacteriol. 46:1105-1112 (1996).
RN [4]
RP NUCLEOTIDE SEQUENCE OF 1-34.
RC STRAIN=Type A / Hall;
RX MEDLINE=89350959; PubMed=2669749;
RA Betley M.J., Somers E., Dasgupta B.R.;
RT "Characterization of botulinum type A neurotoxin gene: delineation of
RT the N-terminal encoding region.";
RL Biochem. Biophys. Res. Commun. 162:1388-1395 (1989).
RN [5]
RP NUCLEOTIDE SEQUENCE OF 1-18.
RC STRAIN=Type A / NIH;
RX MEDLINE=96096783; PubMed=8521962; DOI=10.1016/0014-5793(95)01241-5;
RA Fujita R., Fujinaga Y., Inoue K., Nakajima H., Kumon H., Oguma K.;
RT "Molecular characterization of two forms of nontoxic-nonhemagglutinin
RT components of Clostridium botulinum type A progenitor toxins.";
RL FEBS Lett. 376:41-44 (1995).
RN [6]
RP PROTEIN SEQUENCE OF 1-16.
RX MEDLINE=84178501; PubMed=6370252;
RA Schmidt J.J., Sartymoorthy V., Dasgupta B.R.;
RT "Partial amino acid sequence of the heavy and light chains of
RT botulinum neurotoxin type A.";
RL Biochem. Biophys. Res. Commun. 119:900-904 (1984).
RN [7]
RP PROTEIN SEQUENCE OF 1-46.
RA Dasgupta B.R., Foley J., Niece R.;
RT "Partial sequence of the light chain of botulinum neurotoxin type A.";
RL Biochemistry 26:4162-4162 (1987).
RN [8]
RP PROTEIN SEQUENCE OF 1-5 AND 444-456.
RX MEDLINE=91120847; PubMed=2126206; DOI=10.1016/0300-9084(90)90048-L;
RA Dasgupta B.R., Dekleva M.L.;
RT "Botulinum neurotoxin type A: sequence of amino acids at the N-

terminus and around the nicking site.";
RL Biochimie 72:661-664 (1990).
RN [9]
RP PROTEIN SEQUENCE OF 448-474 AND 872-895.
RX MEDLINE=89024662; PubMed=3178218;
RA Sathymoorthy V., Dasgupta B.R., Foley J., Niece R.L.;
RT "Botulinum neurotoxin type A: Cleavage of the heavy chain into two
RT halves and their partial sequences.";
RL Arch. Biochem. Biophys. 266:142-151 (1988).
RN [10]
RP PROTEIN SEQUENCE OF 448-482.
RX MEDLINE=85285016; PubMed=3896784;
RA Shone C.C., Hambleton P., Melling J.;
RT "Inactivation of Clostridium botulinum type A neurotoxin by trypsin
RT and purification of two tryptic fragments. Proteolytic action near the
RT COOH-terminus of the heavy subunit destroys toxin-binding activity.";
RL Eur. J. Biochem. 151:75-82 (1985).
RN [11]
RP PROTEIN SEQUENCE OF 866-879 AND 1147-1218.
RX PubMed=8397793;
RA Gimenez J.A., Dasgupta B.R.;
RT "Botulinum type A neurotoxin digested with pepsin yields 132, 97, 72,
RT 45, 42, and 18 kD fragments.";
RL J. Protein Chem. 12:351-363 (1993).
RN [12]
RP IDENTIFICATION OF SUBSTRATE.
RX MEDLINE=94063091; PubMed=8243676; DOI=10.1016/0014-5793(93)80448-4;
RA Schiavo G., Santucci A., Dasgupta B.R., Mehta P.P., Jontes J.,
RA Benfenati F., Wilson M.C., Montecucco C.;
RT "Botulinum neurotoxins serotypes A and E cleave SNAP-25 at distinct
RT COOH-terminal peptide bonds.";
RL FEBS Lett. 335:99-103 (1993).
RN [13]
RP IDENTIFICATION OF SUBSTRATE.
RX MEDLINE=94124495; PubMed=8294407;
RA Binz T., Blasi J., Yamasaki S., Baumeister A., Link E., Suedhof T.C.,
RA Jahn R., Niemann H.;
RT "Proteolysis of SNAP-25 by types E and A botulinum neurotoxins.";
RL J. Biol. Chem. 269:1617-1620 (1994).
RN [14]
RP MUTAGENESIS OF GLU-261; PHE-265 AND TYR-365.
RX MEDLINE=21556941; PubMed=11700044; DOI=10.1006/bbrc.2001.5911;
RA Rigoni M., Caccin P., Johnson E.A., Montecucco C., Rossetto O.;
RT "Site-directed mutagenesis identifies active-site residues of the
RT light chain of botulinum neurotoxin type A.";
RL Biochem. Biophys. Res. Commun. 288:1231-1237 (2001).
RN [15]
RP X-RAY CRYSTALLOGRAPHY (3.3 ANGSTROMS).
RX MEDLINE=98455071; PubMed=9783750;
RA Lacy D.B., Tepp W., Cohen A.C., Dasgupta B.R., Stevens R.C.;
RT "Crystal structure of botulinum neurotoxin type A and implications for
RT toxicity.";
RL Nat. Struct. Biol. 5:898-902 (1998).
CC -!- FUNCTION: Inhibits acetylcholine release. The botulinum toxin
CC binds with high affinity to peripheral neuronal presynaptic
CC membrane, is then internalized by receptor-mediated endocytosis.
CC The C-terminus of the heavy chain (H) is responsible for the
CC adherence of the toxin to the cell surface while the N-terminus
CC mediates transport of the light chain from the endocytic vesicle
CC to the cytosol. After translocation, the light chain (L)
CC hydrolyzes the 197-Gln-Arg-198 bond in SNAP-25, thereby blocking
CC neurotransmitter release. Inhibition of acetylcholine release
CC results in flaccid paralysis, with frequent heart or respiratory
CC failure.
CC -!- CATALYTIC ACTIVITY: Limited hydrolysis of proteins of the
CC neuroexocytosis apparatus, synaptobrevins, SNAP25 or syntaxin. No
CC detected action on small molecule substrates.
CC -!- COFACTOR: Binds 1 zinc ion per subunit.
CC -!- SUBUNIT: Disulfide-linked heterodimer of a light chain (L) and a
CC heavy chain (H).
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- PHARMACEUTICAL: Available under the name BOTOX (Allergan) for the
CC treatment of strabismus and blepharospasm associated with dystonia

and cervical dystonia. Also used for the treatment of hemifacial spasm and a number of other neurological disorders characterized by abnormal muscle contraction.

-i- MISCELLANEOUS: There are seven antigenically distinct forms of botulinum neurotoxin: Types A, B, C1, D, E, F, and G.

-i- SIMILARITY: Belongs to the peptidase M27 family.

-i- DATABASE: NAME=BOTOX product information web site; WWW="http://www.botox.com/site/";

-i- DATABASE: NAME=Protein Spotlight; NOTE=Issue 19 of February 2002; WWW="http://www.expasy.org/spotlight/back issues/spot019.shtml".

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EMBL; X52066; CAA36289.1; -; Genomic DNA.
 EMBL; M30196; AAA23262.1; -; Genomic DNA.
 EMBL; X92973; CAA63551.1; -; Genomic DNA.
 EMBL; D67030; BAA11051.1; -; Genomic DNA.
 EMBL; M27892; AAA23269.1; -; Genomic DNA.
 PIR; A35294; BTCLAB.
 PDB; 3BTA; X-ray; A=1-1295.
 MEROPS; M27.002; -.

InterPro; IPR011591; Botulinum.
 InterPro; IPR006025; Pept M Zn BS.
 InterPro; IPR000395; Peptidase M27.
 InterPro; IPR012928; Toxin_recpt_bd_N.
 InterPro; IPR012500; Toxin_trans.
 Pfam; PF01742; Peptidase M27; 1.
 Pfam; PF07953; Toxin_R_bind_N; 1.
 Pfam; PF07952; Toxin_trans; 1.
 PRINTS; PR00760; BOTULINUM.
 PRODOM; PD001963; Botulinum; 1.
 PROSITE; PS00142; ZINC_PROTEASE; 1.
 3D-structure; Direct protein sequencing; Hydrolase; Metal-binding; Metalloprotease; Neurotoxin; Pharmaceutical; Protease; Toxin;
 Transmembrane; Zinc.
 INIT MET 0 0

CHAIN 1 447 Botulinum neurotoxin A light-chain.
 CHAIN 448 1295 Botulinum neurotoxin A heavy-chain.
 TRANSMEM 626 646 Potential.
 TRANSMEM 655 675 Potential.
 ACT_SITE 223 223 Zinc (catalytic).
 METAL 222 222 Zinc (catalytic).
 METAL 226 226 Zinc (catalytic).
 METAL 261 261 Zinc (catalytic).
 DISULFID 429 453 Interchain (between light and heavy chains).
 DISULFID 1234 1279
 VARIANT 26 26 V -> A.
 MUTAGEN 261 261 E->A: Drastic decrease in enzymatic

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 Best Local Similarity 44.4%; Pred. No. 4.1e-18;
 Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;
 QY 1 NIFENTRLTYGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVLYADISTAKPE 60
 Db 1146 NIYNSSLYRGTKFIKKYAS---GNKDNIVRNDRVYINVVKNEYRLATNASQAGVE 1202
 QY 61 KIILKLTSSNNLSLQIIIVMDS-----IGNCTMNFQNNNGNIGLLGFHNN---LV 111
 Db 1203 KILSALEIPDVGN-LSQVVMKSKNDQGITKCKNQLQDNGNDIGFIGHQFNNAIKLV 1261
 QY 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGQOE 142
 Db 1262 ASWYNNRQIERSRTLCSWEFIPVDDGWGE 1292

RESULT 12

Q78BV4_CLOBO

ID Q78BV4_CLOBO PRELIMINARY; PRT; 1296 AA.
 AC Q78BV4;
 DT 10-MAY-2005 (TRENBLrel. 30, Created)
 DT 10-MAY-2005 (TRENBLrel. 30, Last sequence update)
 DE 10-MAY-2005 (TRENBLrel. 30, Last annotation update)
 DE BONT/A (Neurotoxin BONT).
 GN Name=bont/a;
 OS Clostridium botulinum.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.
 OX NCBI_TaxID=1491;
 RN [1]
 RP NUCLEOTIDE SEQUENCE.
 RC STRAIN=Hall A-hyper;
 RX MEDLINE=22617869; PubMed=12732962; DOI=10.1007/s00284-002-3851-1;
 RA Dineen S.S., Bradshaw M., Johnson E.A.;
 RT "Neurotoxin gene clusters in Clostridium botulinum type A strains:
 RL sequence comparison and evolutionary implications.";
 RL Curr. Microbiol. 46:345-352(2003).
 [2]
 RP NUCLEOTIDE SEQUENCE.
 RC STRAIN=Allergan-Hall A;
 RX MEDLINE=22919384; PubMed=14557061; DOI=10.1016/S0378-1119(03)00792-3;
 RA Zhang L., Lin W.J., Li S., Aoki K.R.;
 RT "Complete DNA sequences of the botulinum neurotoxin complex of
 RL Clostridium botulinum type A-Hall (Allergan) strain.";
 RL Gene 315:21-32(2003).
 DR EMBL; AF461540; AAM75961.1; -; Genomic DNA.
 DR EMBL; AF488749; AAO06331.1; -; Genomic DNA.
 KW Neurotoxin.
 SQ SEQUENCE 1296 AA; 149425 MW; DEA8CF2754AB43B6 CRC64;
 Query Match 40.5%; Score 306.5; DB 2; Length 1296;
 Best Local Similarity 44.4%; Pred. No. 4.1e-18;
 Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;
 QY 1 NIFENTRLTYGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREVLYADISTAKPE 60
 Db 1147 NIYNSSLYRGTKFIKKYAS---GNKDNIVRNDRVYINVVKNEYRLATNASQAGVE 1203
 QY 61 KIILKLTSSNNLSLQIIIVMDS-----IGNCTMNFQNNNGNIGLLGFHNN---LV 111
 Db 1204 KILSALEIPDVGN-LSQVVMKSKNDQGITKCKNQLQDNGNDIGFIGHQFNNAIKLV 1262
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 AC Q45894; P77780;
 DT 28-FEB-2003 (Rel. 41, Created)
 DT 28-FEB-2003 (Rel. 41, Last sequence update)
 DT 13-SEP-2005 (Rel. 48, Last annotation update)
 DE Botulinum neurotoxin type A precursor (EC 3.4.24.69) (BONT/A)
 DE (Bontoxilin A) (BOTOX) [Contains: Botulinum neurotoxin A light-chain; Botulinum neurotoxin A heavy-chain].
 GN Name=botA; Synonyms=atx, bna;
 OS Clostridium botulinum.
 OC Bacteria; Firmicutes; Clostridia; Clostridiales; Clostridiaceae;
 OC Clostridium.
 OX NCBI_TaxID=1491;
 RN [1]
 RP NUCLEOTIDE SEQUENCE.
 RC STRAIN=Type A / Kyoto-F;
 RX MEDLINE=94143603; PubMed=8310180; DOI=10.1016/0923-2508(93)90004-L;
 RA Willems A., East A.K., Lawson P.A., Collins M.D.;
 RT "Sequence of the gene coding for the neurotoxin of Clostridium
 RT botulinum type A associated with infant botulism: comparison with
 RT other clostridial neurotoxins.";
 RL Res. Microbiol. 144:547-556(1993).

RN [1]
 RP NUCLEOTIDE SEQUENCE.
 RC STRAIN=CDC B12821;
 RX PubMed=15240298; DOI=10.1128/AEM.70.7.4170-4176.2004;
 RA Franciosa G., Fourshaban M., De Luca A., Buccino A., Dallapiccola B.,
 RA Aureli P.;
 RT "Identification of type a, B, e, and f botulinum neurotoxin genes and
 RT of botulinum neurotoxicogenic clostridia by denaturing high-performance
 RT liquid chromatography.";
 RL Appl. Environ. Microbiol. 70:4170-4176 (2004).
 DR EMBL; AY555069; AAS59788.1; -; Genomic_DNA.
 DR GO; GO:0009405; P:pathogenesis; IEA.
 KW Neurotoxin.
 FT NON_TER 1 1
 FT NON_TER 77 77
 SQ SEQUENCE 77 AA; 9199 MW; 884C21514686F8F1 CRC64;

Query Match 24.8%; Score 188; DB 2; Length 77;
 Best Local Similarity 97.4%; Pred. No. 4.2e-09;
 Matches 37; Conservative 0; Mismatches 1; Indels 0; Gaps 0;
 QY 1 NIFSNTRLTYGVEVIIRKNGSTDISTNTDNFVRKNDLAY 38
 Db 40 NIFSNTRLTYGVEVIIRKNGSTDISTNTDNFVRKNDLAY 77

Search completed: March 2, 2006, 00:46:26
 Job time : 75.3248 secs

GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 00:46:47 ; Search time 17.5847 Seconds
(without alignments)
672.325 Million cell updates/sec

Title: US-08-981-087B-4
Perfect score: 757
Sequence: 1 NIFSNRLTYGTVEVIRKNG.....TSSNGCFWFSFISKEHQEN 143

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 572060 seqs, 82675679 residues
Total number of hits satisfying chosen parameters: 572060

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Issued Patents AA: *
1: /cgn2_6/ptodata/1/iaa/5 COMB.pep: *
2: /cgn2_6/ptodata/1/iaa/6 COMB.pep: *
3: /cgn2_6/ptodata/1/iaa/H COMB.pep: *
4: /cgn2_6/ptodata/1/iaa/PCRTUS COMB.pep: *
5: /cgn2_6/ptodata/1/iaa/RE COMB.pep: *
6: /cgn2_6/ptodata/1/iaa/backfiles1.pep: *

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	306.5	40.5	382	2 US-09-288-326A-9	Sequence 9, Appli
2	306.5	40.5	382	1 US-09-548-409B-9	Sequence 9, Appli
3	306.5	40.5	438	1 US-08-480-604A-23	Sequence 23, Appl
4	306.5	40.5	438	1 US-08-405-496A-23	Sequence 23, Appl
5	306.5	40.5	438	2 US-08-915-136-23	Sequence 23, Appl
6	306.5	40.5	438	2 US-09-084-517-23	Sequence 23, Appl
7	306.5	40.5	462	1 US-08-480-604A-26	Sequence 26, Appl
8	306.5	40.5	462	1 US-08-405-496A-26	Sequence 26, Appl
9	306.5	40.5	462	2 US-08-915-136-26	Sequence 26, Appl
10	306.5	40.5	462	2 US-09-084-517-26	Sequence 26, Appl
11	306.5	40.5	1296	1 US-08-480-604A-28	Sequence 28, Appl
12	306.5	40.5	1296	1 US-08-405-496A-28	Sequence 28, Appl
13	306.5	40.5	1296	1 US-08-915-136-28	Sequence 28, Appl
14	306.5	40.5	1296	2 US-09-084-517-28	Sequence 28, Appl
15	298.5	39.4	848	2 US-10-360-101-219	Sequence 219, App
16	281.5	37.2	141	2 US-09-465-276-1	Sequence 1, Appli
17	277.5	36.7	140	2 US-08-446-114A-22	Sequence 22, Appl
18	149	19.7	1290	2 US-10-360-101-220	Sequence 220, App
19	137	18.1	452	1 US-07-618-312A-4	Sequence 2, Appli
20	137	18.1	452	1 US-07-618-312A-4	Sequence 4, Appli
21	137	18.1	452	1 US-08-110-786A-8	Sequence 8, Appli
22	137	18.1	452	1 US-08-280-228-2	Sequence 2, Appli
23	137	18.1	452	1 US-08-280-228-4	Sequence 2, Appli
24	137	18.1	618	1 US-08-668-381A-5	Sequence 5, Appli
25	137	18.1	853	1 US-08-913-880C-17	Sequence 17, Appl
26	137	18.1	858	2 US-08-913-880C-16	Sequence 16, Appl
27	137	18.1	860	2 US-08-913-880C-15	Sequence 15, Appl

28	137	18.1	862	2 US-08-913-880C-14	Sequence 14, Appl
29	137	18.1	865	2 US-08-913-880C-13	Sequence 13, Appl
30	137	18.1	866	2 US-08-913-880C-12	Sequence 12, Appl
31	137	18.1	874	2 US-08-913-880C-11	Sequence 11, Appl
32	137	18.1	875	2 US-08-913-880C-10	Sequence 10, Appl
33	137	18.1	1315	2 US-08-913-880C-1	Sequence 1, Appli
34	94.5	12.5	468	2 US-09-248-796A-24925	Sequence 24925, A
35	91.5	12.1	361	1 US-08-415-751-3	Sequence 3, Appli
36	87	11.5	213	2 US-09-248-796A-22484	Sequence 22484, A
37	84	11.1	25	2 US-09-465-276-3	Sequence 3, Appli
38	83	11.0	446	2 US-09-830-230A-570	Sequence 570, App
39	83	11.0	469	2 US-09-830-230A-569	Sequence 569, App
40	82.5	10.9	461	2 US-09-248-796A-19247	Sequence 19247, A
41	81	10.7	668	2 US-09-697-367-2	Sequence 2, Appli
42	81	10.7	668	2 US-09-918-909A-2	Sequence 2, Appli
43	80	10.6	856	1 US-08-375-100-1	Sequence 1, Appli
44	79.5	10.5	1969	2 US-09-418-710-72	Sequence 72, Appl
45	79.5	10.5	1969	2 US-09-839-479-71	Sequence 71, Appl

ALIGNMENTS

RESULT 1
US-09-288-326A-9
; Sequence 9, Application US/09288326A
; Patent No. 6776990
; GENERAL INFORMATION:
; APPLICANT: Steward, Lance E.
; APPLICANT: Aoki, K. Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Methods and Compositions for the
; TITLE OF INVENTION: Treatment of Pancreatitis
; FILE REFERENCE: 17282
; CURRENT APPLICATION NUMBER: US/09/288,326A
; CURRENT FILING DATE: 1999-04-08
; NUMBER OF SEQ ID NOS: 15
; SOFTWARE: FastSeq for Windows Version 4.0
; SEQ ID NO 9
; TYPE: PRT
; ORGANISM: Clostridium Botulinum
US-09-288-326A-9

Query Match 40.5%; Score 306.5; DB 2; Length 382;
Best Local Similarity 44.4%; Pred No. 2.7e-25;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;
QY 1 NIFSNRLTYGTVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVRLYADISIAKPE 60
DB 233 NYLNSLYRGTKFIKKYAS--GNKDNIVRNDRVYINVVKNKYRLATNASQAGVE 289
QY 61 KIKLIRTSNNSLSGQIIIVDS-----IGNCTNFWNNNGNIGLIGFHSNN-----LV 111
DB 290 KILSALEIPDVGN-LSQVVMKSKNDQGITNKKCNLQDNNNGNDIGFTGFHFQFNNAIKLV 348
QY 112 ASSWYNNIRKNTSNGCFWFSFISKEHQWE 142
DB 349 ASNWNQIERSRSLTGCSEWEIFPVDGWE 379

RESULT 2
US-09-548-409B-9
; Sequence 9, Application US/09548409B
; Patent No. 6843998
; GENERAL INFORMATION:
; APPLICANT: Steward, Lance E.
; APPLICANT: Aoki, K. Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Methods and Compositions for the
; TITLE OF INVENTION: Treatment of Pancreatitis
; FILE REFERENCE: 17282CIP(AP)
; CURRENT APPLICATION NUMBER: US/09/548,409B

REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01308
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 23:
SEQUENCE CHARACTERISTICS:
LENGTH: 438 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-405-496A-23

Query Match 40.5%; Score 306.5; DB 1; Length 438;
Best Local Similarity 44.4%; Pred. No. 3.2e-25;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;
QY 1 NIFSNTLYTGEVIRKNGSTDISNTDNFVRKNDLAYINVVDRDVEYRLYADISIAPKE 60
DB 289 NIYLNSSLYRGTKFIKKYAS---GNKDNIVRNNDRVIVNVVKNKEYRLATNASQAGVE 345
QY 61 KIILRTSNNSLGOIIVWDS-----IGNNCTMFQNNNGNIGLLGFHSNN----LV 111
DB 346 KILSALEIPDVGN-LSQVVMKSKNDQGITNKKCNQLQDNNNDIGFIFGHQFNIAKLV 404
QY 112 ASSWYNNIRKNTSSNGCFMSFISKEHGWOE 142
DB 405 ASWYNNRQIERSRSLTGCSEFIPVDDGWGE 435

RESULT 5

US-08-915-136-23
Sequence 23, Application US/08915136
Patent No. 6290960
GENERAL INFORMATION:

APPLICANT: KINK, JOHN A.
APPLICANT: THALLEY, BRUCE S.
APPLICANT: PADHYE, NISHA V.
APPLICANT: FIRCA, JOSEPH R.
APPLICANT: STAFFORD, DOUGLAS C.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 32
CORRESPONDENCE ADDRESS:
ADDRESSEE: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104

COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
FILING DATE: US/08/915,136

CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/480,604
FILING DATE:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/405,496
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321

FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01763
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 23:
SEQUENCE CHARACTERISTICS:
LENGTH: 438 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-915-136-23

Query Match 40.5%; Score 306.5; DB 2; Length 438;
Best Local Similarity 44.4%; Pred. No. 3.2e-25;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;
QY 1 NIFSNTLYTGEVIRKNGSTDISNTDNFVRKNDLAYINVVDRDVEYRLYADISIAPKE 60
DB 289 NIYLNSSLYRGTKFIKKYAS---GNKDNIVRNNDRVIVNVVKNKEYRLATNASQAGVE 345
QY 61 KIILRTSNNSLGOIIVWDS-----IGNNCTMFQNNNGNIGLLGFHSNN----LV 111
DB 346 KILSALEIPDVGN-LSQVVMKSKNDQGITNKKCNQLQDNNNDIGFIFGHQFNIAKLV 404
QY 112 ASSWYNNIRKNTSSNGCFMSFISKEHGWOE 142
DB 405 ASWYNNRQIERSRSLTGCSEFIPVDDGWGE 435

RESULT 6

US-09-084-517-23
Sequence 23, Application US/09084517
Patent No. 6613329
GENERAL INFORMATION:

APPLICANT: KINK, JOHN A.
APPLICANT: WILLIAMS, JAMES A.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 30
CORRESPONDENCE ADDRESS:
ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104

COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
FILING DATE: US/09/084,517

CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/
FILING DATE: 16-MAR-1995
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321

2

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PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01308
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 26:
SEQUENCE CHARACTERISTICS:
LENGTH: 462 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-405-496A-26

Query Match 40.5%; Score 306.5; DB 1; Length 462;
Best Local Similarity 44.4%; Pred. No. 3.5e-25;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

Qy 1 NIFSNTRYTGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVLYADISIAKPE 60
Db 313 NIYLNSSLYRGTKFIKKYAS---GNKDNIVRNDRVINVVKKEYRLATNASQAGVE 369
Qy 61 KIIKLIRTSNNSLQGIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LV 111
Db 370 KILSALEIPDVGN-LSQVVMKSKNDQGITNKKCKNLQDNNNDIGFIFGFHFQFNNAKLV 428
Qy 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGWOE 142
Db 429 ASNWNQRIERSRSLGCSWEIFPVDGOWGE 459

RESULT 9
US-08-915-136-26
Sequence 26, Application US/08915136
Patent No. 6290960
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
APPLICANT: THALLEY, BRUCE S.
APPLICANT: PADHYE, NISHA V.
APPLICANT: FIRCA, JOSEPH R.
APPLICANT: STAFFORD, DOUGLAS C.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 32
CORRESPONDENCE ADDRESS:
ADDRESSEE: MEDLEN & CARROLL, LLP
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/915,136
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/480,604
FILING DATE:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/405,496
FILING DATE: 16-MAR-1995

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PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/329,154
FILING DATE: 25-OCT-1994
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/161,907
FILING DATE: 02-DEC-1993
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/985,321
FILING DATE: 04-DEC-1992
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 07/429,791
FILING DATE: 31-OCT-1989
ATTORNEY/AGENT INFORMATION:
NAME: INGOLIA, DIANE E.
REGISTRATION NUMBER: 40,027
REFERENCE/DOCKET NUMBER: OPHD-01763
TELECOMMUNICATION INFORMATION:
TELEPHONE: (415) 705-8410
TELEFAX: (415) 397-8338
INFORMATION FOR SEQ ID NO: 26:
SEQUENCE CHARACTERISTICS:
LENGTH: 462 amino acids
TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein
US-08-915-136-26

Query Match 40.5%; Score 306.5; DB 2; Length 462;
Best Local Similarity 44.4%; Pred. No. 3.5e-25;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

Qy 1 NIFSNTRYTGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDREVLYADISIAKPE 60
Db 313 NIYLNSSLYRGTKFIKKYAS---GNKDNIVRNDRVINVVKKEYRLATNASQAGVE 369
Qy 61 KIIKLIRTSNNSLQGIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LV 111
Db 370 KILSALEIPDVGN-LSQVVMKSKNDQGITNKKCKNLQDNNNDIGFIFGFHFQFNNAKLV 428
Qy 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGWOE 142
Db 429 ASNWNQRIERSRSLGCSWEIFPVDGOWGE 459

RESULT 10
US-08-084-517-26
Sequence 26, Application US/09084517
Patent No. 6613329
GENERAL INFORMATION:
APPLICANT: KINK, JOHN A.
APPLICANT: WILLIAMS, JAMES A.
TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND PREVENTION OF C. DIFFICILE DISEASE
NUMBER OF SEQUENCES: 30
CORRESPONDENCE ADDRESS:
ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
STREET: 220 MONTGOMERY STREET, SUITE 2200
CITY: SAN FRANCISCO
STATE: CALIFORNIA
COUNTRY: UNITED STATES OF AMERICA
ZIP: 94104
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patent In Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/084,517
FILING DATE:
CLASSIFICATION:
PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/
FILING DATE: 16-MAR-1995

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; FILING DATE: 16-MAR-1995
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01308
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 28:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1296 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-405-496A-28

Query Match 40.5%; Score 306.5; DB 1; Length 1296;
Best Local Similarity 44.4%; Pred. No. 1.4e-24;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

QY 1 NIFSNRLTYGVEVIRKNGSTDISNTDNFVRKNDLAVINVVDREYRLVADISIAKPE 60
DB 1147 NYLNSSLYRGTKFIKKYAS---GNKDNVNRNDRVINVVKKEYRLATNASQAGVE 1203
QY 61 KIIKLIRTSNNSISLGIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LV 111
DB 1204 KILSALEIPDVGN-LSQVVMKSKNDQGITNKKCNQLQDNNNDIGFIFGHQFNNAKLV 1262
QY 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGQOE 142
DB 1263 ASNWYNRQIERSRSLTGCSEWFIPIVDDGWGE 1293

RESULT 13
US-08-915-136-28
; Sequence 28, Application US/08915136
; Patent No. 6290960
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: THALLEY, BRUCE S.
; APPLICANT: PADHYE, NISHA V.
; APPLICANT: FIRCA, JOSEPH R.
; APPLICANT: STAFFORD, DOUGLAS C.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 32
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: MEDLEN & CARROLL, LLP
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: Patent In Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/915,136

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; FILING DATE:
; CLASSIFICATION:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: 08/480,604
; FILING DATE:
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/405,496
; FILING DATE: 16-MAR-1995
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/329,154
; FILING DATE: 25-OCT-1994
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 08/161,907
; FILING DATE: 02-DEC-1993
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/985,321
; FILING DATE: 04-DEC-1992
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: US 07/429,791
; FILING DATE: 31-OCT-1989
; ATTORNEY/AGENT INFORMATION:
; NAME: INGOLIA, DIANE E.
; REGISTRATION NUMBER: 40,027
; REFERENCE/DOCKET NUMBER: OPHD-01763
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: (415) 705-8410
; TELEFAX: (415) 397-8338
; INFORMATION FOR SEQ ID NO: 28:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 1296 amino acids
; TYPE: amino acid
; TOPOLOGY: linear
; MOLECULE TYPE: protein
; US-08-915-136-28

Query Match 40.5%; Score 306.5; DB 2; Length 1296;
Best Local Similarity 44.4%; Pred. No. 1.4e-24;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

QY 1 NIFSNRLTYGVEVIRKNGSTDISNTDNFVRKNDLAVINVVDREYRLVADISIAKPE 60
DB 1147 NYLNSSLYRGTKFIKKYAS---GNKDNVNRNDRVINVVKKEYRLATNASQAGVE 1203
QY 61 KIIKLIRTSNNSISLGIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LV 111
DB 1204 KILSALEIPDVGN-LSQVVMKSKNDQGITNKKCNQLQDNNNDIGFIFGHQFNNAKLV 1262
QY 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGQOE 142
DB 1263 ASNWYNRQIERSRSLTGCSEWFIPIVDDGWGE 1293

RESULT 14
US-09-084-517-28
; Sequence 28, Application US/09084517
; Patent No. 6613329
; GENERAL INFORMATION:
; APPLICANT: KINK, JOHN A.
; APPLICANT: WILLIAMS, JAMES A.
; TITLE OF INVENTION: VACCINE AND ANTITOXIN FOR TREATMENT AND
; TITLE OF INVENTION: PREVENTION OF C. DIFFICILE DISEASE
; NUMBER OF SEQUENCES: 30
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: HAVERSTOCK, MEDLEN & CARROLL
; STREET: 220 MONTGOMERY STREET, SUITE 2200
; CITY: SAN FRANCISCO
; STATE: CALIFORNIA
; COUNTRY: UNITED STATES OF AMERICA
; ZIP: 94104
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS

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GenCore version 5.1.7
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OM protein - protein search, using sw model

Run on: March 2, 2006, 01:11:03 ; Search time 56.9014 Seconds
(without alignments)
1050.055 Million cell updates/sec

Title: US-08-981-087B-4
Perfect score: 757
Sequence: 1 NISFNRLYTGVEIIRKNG.....TSSNGCFWSFISKEHCWQEN 143

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 1867569 seqs, 417829326 residues

Total number of hits satisfying chosen parameters: 1867569

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : Published Applications AA Main:
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2: /cgn2_6/ptodata/1/pubpaa/US08_PUBCOMB.pap:*
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5: /cgn2_6/ptodata/1/pubpaa/US10B_PUBCOMB.pap:*
6: /cgn2_6/ptodata/1/pubpaa/US11_PUBCOMB.pap:*

Pred. No. is the number of results predicted by chance to have a
score greater than or equal to the score of the result being printed,
and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
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2	757	100.0	431	2	Sequence 4, Appli
3	757	100.0	432	3	Sequence 1, Appli
4	757	100.0	432	3	Sequence 16, Appl
5	757	100.0	432	3	Sequence 34, Appl
6	757	100.0	432	4	Sequence 176, App
7	757	100.0	645	4	Sequence 8, Appli
8	757	100.0	645	4	Sequence 5, Appli
9	757	100.0	657	4	Sequence 6, Appli
10	757	100.0	657	4	Sequence 7, Appli
11	757	100.0	865	4	Sequence 4, Appli
12	757	100.0	887	4	Sequence 6, Appli
13	757	100.0	979	4	Sequence 26, Appl
14	757	100.0	1032	4	Sequence 15, Appl
15	757	100.0	1092	4	Sequence 14, Appl
16	757	100.0	1192	4	Sequence 23, Appl
17	757	100.0	1192	4	Sequence 24, Appl
18	757	100.0	1278	4	Sequence 152, App
19	757	100.0	1278	4	Sequence 12, Appl
20	757	100.0	1288	4	Sequence 26, Appl
21	639	84.4	1280	4	Sequence 162, App
22	607	80.2	448	4	Sequence 73, Appl
23	607	80.2	448	4	Sequence 73, Appl
24	607	80.2	448	4	Sequence 73, Appl
25	607	80.2	448	4	Sequence 73, Appl
26	607	80.2	448	5	Sequence 73, Appl
27	607	80.2	448	5	Sequence 73, Appl

28	607	80.2	448	5	US-10-728-696-73	Sequence 73, Appl
29	607	80.2	448	6	US-11-001-241-73	Sequence 73, Appl
30	607	80.2	1274	4	US-10-354-774-71	Sequence 71, Appl
31	607	80.2	1274	4	US-10-271-012-71	Sequence 71, Appl
32	607	80.2	1274	4	US-10-452-024-6	Sequence 6, Appli
33	607	80.2	1274	4	US-10-729-122-71	Sequence 71, Appl
34	607	80.2	1274	4	US-10-729-039-71	Sequence 71, Appl
35	607	80.2	1274	5	US-10-729-527-71	Sequence 71, Appl
36	607	80.2	1274	5	US-10-728-696-71	Sequence 71, Appl
37	607	80.2	1274	5	US-10-728-696-71	Sequence 71, Appl
38	607	80.2	1274	6	US-11-001-241-71	Sequence 71, Appl
39	581	76.8	1268	4	US-10-452-024-156	Sequence 156, App
40	417.5	55.2	1251	4	US-10-452-024-127	Sequence 127, App
41	401	53.0	449	3	US-09-910-186A-14	Sequence 14, Appl
42	401	53.0	452	4	US-10-354-774-56	Sequence 56, Appl
43	401	53.0	452	4	US-10-271-012-56	Sequence 56, Appl
44	401	53.0	452	4	US-10-729-122-56	Sequence 56, Appl
45	401	53.0	452	4	US-10-729-039-56	Sequence 56, Appl

ALIGNMENTS

RESULT 1
US-08-981-087A-4
; Sequence 4, Application US/08981087A
; Publication No. US20020081304A1
; GENERAL INFORMATION:
; APPLICANT: Elmore, Michael J.
; APPLICANT: Mauchline, Margaret L.
; APPLICANT: Minton, Nigel P.
; APPLICANT: Pasechnik, Vladimir A.
; APPLICANT: Titball, Richard W.
; TITLE OF INVENTION: TYPE P BOTULINUM TOXIN AND USE THEREOF
; NUMBER OF SEQUENCES: 6
; CORRESPONDENCE ADDRESS:
; ADDRESSEE: NIXON & VANDERHYE P.C.
; STREET: 1100 No. US20020081304Alth Glebe Rd. 8th floor
; CITY: Arlington
; STATE: VA
; COUNTRY: USA
; ZIP: 22201-4741
; COMPUTER READABLE FORM:
; MEDIUM TYPE: Floppy disk
; COMPUTER: IBM PC compatible
; OPERATING SYSTEM: PC-DOS/MS-DOS
; SOFTWARE: PatentIn Release #1.0, Version #1.30
; CURRENT APPLICATION DATA:
; APPLICATION NUMBER: US/08/981.087A
; FILING DATE: 27-MAY-1998
; CLASSIFICATION: 424
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: PCT/GB96/01409
; FILING DATE: 12-JUN-1996
; PRIOR APPLICATION DATA:
; APPLICATION NUMBER: GB 9511909.5
; FILING DATE: 12-JUN-1995
; ATTORNEY/AGENT INFORMATION:
; NAME: Crawford, Arthur R.
; REGISTRATION NUMBER: 25,327
; REFERENCE/DOCKET NUMBER: 124-688
; TELECOMMUNICATION INFORMATION:
; TELEPHONE: 703-816-4000
; TELEFAX: 703-816-4100
; INFORMATION FOR SEQ ID NO: 4:
; SEQUENCE CHARACTERISTICS:
; LENGTH: 143 amino acids
; TYPE: amino acid
; STRANDEDNESS:
; TOPOLOGY: linear
; MOLECULE TYPE: peptide
US-08-981-087A-4

TITLE OF INVENTION: RECOMBINANT VACCINE AGAINST BOTULINUM

TITLE OF INVENTION: NEUROTOXIN
 FILE REFERENCE: A33626-A 067252.0107
 CURRENT APPLICATION NUMBER: US/09/910,186A
 CURRENT FILING DATE: 2001-07-20
 PCT APPLICATION NUMBER: PCT/US00/12890
 PRIOR FILING DATE: 2000-05-12
 PRIOR APPLICATION NUMBER: 09/611,419
 PRIOR FILING DATE: 2000-07-06
 PRIOR APPLICATION NUMBER: 60/133,865
 PRIOR FILING DATE: 1999-05-12
 PRIOR APPLICATION NUMBER: 60/133,866
 PRIOR FILING DATE: 1999-05-12
 PRIOR APPLICATION NUMBER: 60/133,867
 PRIOR FILING DATE: 1999-05-12
 PRIOR APPLICATION NUMBER: 60/133,868
 PRIOR FILING DATE: 1999-05-12
 PRIOR APPLICATION NUMBER: 60/133,869
 PRIOR FILING DATE: 1999-05-12
 PRIOR APPLICATION NUMBER: 60/133,873
 PRIOR FILING DATE: 1999-05-12
 PRIOR APPLICATION NUMBER: 08/123,975
 PRIOR FILING DATE: 1993-09-21
 NUMBER OF SEQ ID NOS: 34
 SOFTWARE: Fast-Seq for Windows Version 4.0
 SEQ ID NO 34
 LENGTH: 432
 TYPE: PRT
 ORGANISM: Artificial Sequence
 FEATURE:
 OTHER INFORMATION: Synthetic Construct
 US-09-910-186A-34

Query Match 100.0%; Score 757; DB 3; Length 432;
 Best Local Similarity 100.0%; Pred. No. 3.1e-67;
 Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 NIFSNTRLTYGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60
 Db 290 NIFSNTRLTYGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 349
 Qy 61 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFONNNGNIGLLGFHSHNNLVASSWYNNI 120
 Db 350 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFONNNGNIGLLGFHSHNNLVASSWYNNI 409
 Qy 121 RKTSSNGCFWSPFSKEHGQEN 143
 Db 410 RKTSSNGCFWSPFSKEHGQEN 432

RESULT 5
 US-10-452-024-178
 Sequence 178, Application US/10452024
 Publication No. US20040013687A1
 GENERAL INFORMATION:
 APPLICANT: Simpson, Lance
 APPLICANT: Park, Jung-Beak
 APPLICANT: Maksymowich, Andrew
 TITLE OF INVENTION: Compositions and Methods For Trans epithelial Molecular Transport
 FILE REFERENCE: 9855-96U1
 CURRENT APPLICATION NUMBER: US/10/452,024
 CURRENT FILING DATE: 2003-06-02
 PRIOR APPLICATION NUMBER: 60/384,949
 PRIOR FILING DATE: 2002-05-31
 NUMBER OF SEQ ID NOS: 188
 SOFTWARE: Patent in version 3.2
 SEQ ID NO 178
 LENGTH: 432
 TYPE: PRT
 ORGANISM: Clostridium botulinum
 US-10-452-024-178

Query Match 100.0%; Score 757; DB 4; Length 432;

Best Local Similarity 100.0%; Pred. No. 3.1e-67;
 Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 Qy 1 NIFSNTRLTYGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60
 Db 290 NIFSNTRLTYGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 349
 Qy 61 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFONNNGNIGLLGFHSHNNLVASSWYNNI 120
 Db 350 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFONNNGNIGLLGFHSHNNLVASSWYNNI 409
 Qy 121 RKTSSNGCFWSPFSKEHGQEN 143
 Db 410 RKTSSNGCFWSPFSKEHGQEN 432

RESULT 6
 US-10-130-973A-8
 Sequence 8, Application US/10130973A
 Publication No. US20030147895A1
 GENERAL INFORMATION:
 APPLICANT: Shone, Clifford
 APPLICANT: Sutton, John
 APPLICANT: Silman, Nigel
 TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
 FILE REFERENCE: 1581.092000
 CURRENT APPLICATION NUMBER: US/10/130,973A
 CURRENT FILING DATE: 2002-10-21
 PRIOR APPLICATION NUMBER: PCT/GB00/04644
 PRIOR FILING DATE: 2000-12-04
 PRIOR APPLICATION NUMBER: GB 9928530.6
 PRIOR FILING DATE: 1999-12-02
 PRIOR APPLICATION NUMBER: GB 008658.7
 PRIOR FILING DATE: 2000-04-07
 NUMBER OF SEQ ID NOS: 18
 SOFTWARE: Patent in version 3.0
 SEQ ID NO 8
 LENGTH: 645
 TYPE: PRT
 ORGANISM: Artificial Sequence
 FEATURE:
 OTHER INFORMATION: synthetic construct
 US-10-130-973A-8

Query Match 100.0%; Score 757; DB 4; Length 645;
 Best Local Similarity 100.0%; Pred. No. 5.2e-67;
 Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 Qy 1 NIFSNTRLTYGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60
 Db 503 NIFSNTRLTYGVEVIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 562
 Qy 61 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFONNNGNIGLLGFHSHNNLVASSWYNNI 120
 Db 563 KIIKLIRTSNNSLSGQIIIVMDSIGNNCTMNFONNNGNIGLLGFHSHNNLVASSWYNNI 622
 Qy 121 RKTSSNGCFWSPFSKEHGQEN 143
 Db 623 RKTSSNGCFWSPFSKEHGQEN 645

RESULT 7
 US-10-478-516-5
 Sequence 5, Application US/10478516
 Publication No. US2004020889A1
 GENERAL INFORMATION:
 APPLICANT: Sutton, John M.
 APPLICANT: Shone, Clifford C.
 TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
 FILE REFERENCE: 1581.100000
 CURRENT APPLICATION NUMBER: US/10/478,516
 CURRENT FILING DATE: 2003-11-24
 PRIOR APPLICATION NUMBER: PCT/GB02/02384

; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 5
; LENGTH: 645
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: diphtheria toxin translocation domain with BoNT/F-HC
US-10-478-516-5

Query Match 100.0%; Score 757; DB 4; Length 645;
Best Local Similarity 100.0%; Pred. No. 5.2e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 NIPSNRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDVDRVEYRLYADISIAKPE 60
Db NIPSNRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDVDRVEYRLYADISIAKPE 562

QY 61 KIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNI 120
Db KIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNI 622

QY 121 RNTSSNGCFWFSFISKEHGWQEN 143
Db RNTSSNGCFWFSFISKEHGWQEN 645

RESULT 8

US-10-478-516-6
; Sequence 6, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; APPLICANT: Shone, Clifford C.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; PRIOR FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 6
; LENGTH: 657
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: thrombin linker, diphtheria toxin translocation domain, BoNT/F-HC
US-10-478-516-6

Query Match 100.0%; Score 757; DB 4; Length 657;
Best Local Similarity 100.0%; Pred. No. 5.3e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 NIPSNRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDVDRVEYRLYADISIAKPE 60
Db NIPSNRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDVDRVEYRLYADISIAKPE 574

QY 61 KIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNI 120
Db KIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNI 634

QY 121 RNTSSNGCFWFSFISKEHGWQEN 143
Db RNTSSNGCFWFSFISKEHGWQEN 657

RESULT 9

US-10-478-516-7
; Sequence 7, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; APPLICANT: Shone, Clifford C.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; PRIOR FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: PatentIn version 3.1
; SEQ ID NO 7
; LENGTH: 657
; TYPE: PRT
; ORGANISM: Artificial sequence
; FEATURE:
; OTHER INFORMATION: factor Xa linker, diphtheria toxin translocation domain, BoNT/F-HC
US-10-478-516-7

Query Match 100.0%; Score 757; DB 4; Length 657;
Best Local Similarity 100.0%; Pred. No. 5.3e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 NIPSNRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDVDRVEYRLYADISIAKPE 60
Db NIPSNRLTYGVEVIIRKNGSTDISTDNFVRKNDLAYINVVDVDRVEYRLYADISIAKPE 574

QY 61 KIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNI 120
Db KIKLIRTSNNSLGOIIVMDSIGNNCTMNFQNNNGNIGLLGPHSNLNVASSWYNNI 634

QY 121 RNTSSNGCFWFSFISKEHGWQEN 143
Db RNTSSNGCFWFSFISKEHGWQEN 657

RESULT 10

US-10-130-973A-7
; Sequence 7, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; PRIOR FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: PatentIn version 3.0
; SEQ ID NO 7
; LENGTH: 685
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
US-10-130-973A-7

Query Match 100.0%; Score 757; DB 4; Length 685;
Best Local Similarity 100.0%; Pred. No. 5.6e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Qy 1 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 60
Db 543 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 602
Qy 61 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 603 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 662
Qy 121 RKNSSNGCFWFSFISKEHGQEN 143
Db 663 RKNSSNGCFWFSFISKEHGQEN 685

RESULT 11
US-10-130-973A-4
; Sequence 4, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: Patent in version 3.0
; SEQ ID NO 4
; LENGTH: 862
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
; US-10-130-973A-4

Query Match 100.0%; Score 757; DB 4; Length 862;
Best Local Similarity 100.0%; Pred. No. 7.4e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 60
Db 720 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 779
Qy 61 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 780 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 839
Qy 121 RKNSSNGCFWFSFISKEHGQEN 143
Db 840 RKNSSNGCFWFSFISKEHGQEN 862

RESULT 12
US-10-130-973A-6
; Sequence 6, Application US/10130973A
; Publication No. US20030147895A1
; GENERAL INFORMATION:
; APPLICANT: Shone, Clifford
; APPLICANT: Sutton, John
; APPLICANT: Silman, Nigel
; TITLE OF INVENTION: Constructs for Delivery of Therapeutic Agents to Neuronal Cells
; FILE REFERENCE: 1581.0920000
; CURRENT APPLICATION NUMBER: US/10/130,973A
; CURRENT FILING DATE: 2002-10-21
; PRIOR APPLICATION NUMBER: PCT/GB00/04644
; PRIOR FILING DATE: 2000-12-04
; PRIOR APPLICATION NUMBER: GB 9928530.6
; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: Patent in version 3.0
; SEQ ID NO 6
; LENGTH: 887
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
; US-10-130-973A-6

Query Match 100.0%; Score 757; DB 4; Length 887;
Best Local Similarity 100.0%; Pred. No. 7.7e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 60
Db 745 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 804
Qy 61 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 805 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 864
Qy 121 RKNSSNGCFWFSFISKEHGQEN 143
Db 865 RKNSSNGCFWFSFISKEHGQEN 887

RESULT 13
US-10-478-516-26
; Sequence 26, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; APPLICANT: Shone, Clifford C.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; CURRENT FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: Patent in version 3.1
; SEQ ID NO 26
; LENGTH: 979
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Protein sequence for YopT, factor Xa linker, diphtheria toxin
; OTHER INFORMATION: translocation
; OTHER INFORMATION: domain, with BONT/F-HC
; US-10-478-516-26

Query Match 100.0%; Score 757; DB 4; Length 979;
Best Local Similarity 100.0%; Pred. No. 8.7e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 60
Db 837 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 896
Qy 61 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 897 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 956
Qy 121 RKNSSNGCFWFSFISKEHGQEN 143
Db 957 RKNSSNGCFWFSFISKEHGQEN 979

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; PRIOR FILING DATE: 1999-12-02
; PRIOR APPLICATION NUMBER: GB 008658.7
; PRIOR FILING DATE: 2000-04-07
; NUMBER OF SEQ ID NOS: 18
; SOFTWARE: Patent in version 3.0
; SEQ ID NO 6
; LENGTH: 887
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: synthetic construct
; US-10-130-973A-6

Query Match 100.0%; Score 757; DB 4; Length 887;
Best Local Similarity 100.0%; Pred. No. 7.7e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 60
Db 745 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 804
Qy 61 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 805 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 864
Qy 121 RKNSSNGCFWFSFISKEHGQEN 143
Db 865 RKNSSNGCFWFSFISKEHGQEN 887

RESULT 13
US-10-478-516-26
; Sequence 26, Application US/10478516
; Publication No. US2004020889A1
; GENERAL INFORMATION:
; APPLICANT: Sutton, John M.
; APPLICANT: Shone, Clifford C.
; TITLE OF INVENTION: Pharmaceutical Use of Secreted Bacterial Effector Proteins
; FILE REFERENCE: 1581.1000000
; CURRENT APPLICATION NUMBER: US/10/478,516
; CURRENT FILING DATE: 2003-11-24
; PRIOR APPLICATION NUMBER: PCT/GB02/02384
; PRIOR FILING DATE: 2002-05-21
; PRIOR APPLICATION NUMBER: GB 0112687.9
; PRIOR FILING DATE: 2001-05-24
; NUMBER OF SEQ ID NOS: 32
; SOFTWARE: Patent in version 3.1
; SEQ ID NO 26
; LENGTH: 979
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Protein sequence for YopT, factor Xa linker, diphtheria toxin
; OTHER INFORMATION: translocation
; OTHER INFORMATION: domain, with BONT/F-HC
; US-10-478-516-26

Query Match 100.0%; Score 757; DB 4; Length 979;
Best Local Similarity 100.0%; Pred. No. 8.7e-67;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 60
Db 837 NIPSNRLTYGVEVIRKNGSTDISTDNFVRKNDLAYINVVDVDRVYRLYADISIAKPE 896
Qy 61 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 897 KIIKLIRTSNNSLSGLQIIVMDSIGNNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 956
Qy 121 RKNSSNGCFWFSFISKEHGQEN 143
Db 957 RKNSSNGCFWFSFISKEHGQEN 979

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OM protein - protein search, using sw model

Run on: March 2, 2006, 01:12:18 ; Search time 5.80626 Seconds
(without alignments)
491.279 Million cell updates/sec

Title: US-08-981-087B-4
Perfect score: 757
Sequence: 1 NIFSNRLTYGVEIIRKNG.....TSSNGCFWSFKHGWOEN 143

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 133702 seqs, 19947517 residues

Total number of hits satisfying chosen parameters: 133702

Minimum DB seq length: 0
Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

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1: /cgn2_6/ptodata/1/pubpaa/US08_NEW_PUB pep.*
2: /cgn2_6/ptodata/1/pubpaa/US06_NEW_PUB pep.*
3: /cgn2_6/ptodata/1/pubpaa/US07_NEW_PUB pep.*
4: /cgn2_6/ptodata/1/pubpaa/PCT_NEW_PUB pep.*
5: /cgn2_6/ptodata/1/pubpaa/US09_NEW_PUB pep.*
6: /cgn2_6/ptodata/1/pubpaa/US10_NEW_PUB pep.*
7: /cgn2_6/ptodata/1/pubpaa/US11_NEW_PUB pep.*
8: /cgn2_6/ptodata/1/pubpaa/US60_NEW_PUB pep.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	757	100.0	1059	7	US/11/062 Sequence 5, Appli
2	757	100.0	1084	7	US/11/062 Sequence 8, Appli
3	607	80.2	838	6	US-10-909-769-28 Sequence 28, Appl
4	401	53.0	829	6	US-10-909-769-26 Sequence 26, Appl
5	306.5	40.5	849	6	US-10-909-769-18 Sequence 18, Appl
6	306.5	40.5	1067	7	US/11/062 Sequence 3, Appli
7	306.5	40.5	1092	7	US/11/062 Sequence 6, Appli
8	160	21.1	900	6	US-10-909-769-20 Sequence 20, Appl
9	149	19.7	1070	7	US/11/062 Sequence 4, Appli
10	149	19.7	1095	7	US/11/062 Sequence 7, Appli
11	142.5	18.8	855	6	US-10-909-769-30 Sequence 30, Appl
12	137	18.1	1315	7	US-11-077-550-141 Sequence 141, Appl
13	103.5	13.7	834	6	US-10-909-769-24 Sequence 24, Appl
14	88.5	11.7	874	7	US-11-087-099-10263 Sequence 10263, A
15	86	11.4	2340	7	US-11-052-554A-171 Sequence 171, Appl
16	85	11.2	560	7	US-11-131-479-22 Sequence 22, Appl
17	82.5	10.9	338	7	US-11-087-099-4021 Sequence 4021, Ap
18	82.5	10.9	348	7	US-11-087-099-6679 Sequence 6679, Ap
19	80	10.6	964	7	US-11-089-551A-30 Sequence 30, Appl
20	80	10.6	1268	7	US-11-052-554A-1 Sequence 1, Appli
21	79	10.4	560	7	US-11-033-039-1312 Sequence 1312, Ap
22	77	10.2	244	7	US-11-087-099-8445 Sequence 8445, Ap
23	76	10.0	701	7	US-11-087-099-8731 Sequence 8731, Ap
24	76	10.0	710	7	US-11-089-551A-33 Sequence 33, Appl
25	76	10.0	1237	7	US-11-052-554A-95 Sequence 95, Appl

26	75	9.9	1778	7	US-11-087-099-12160 Sequence 12160, A
27	74.5	9.8	842	6	US-10-909-769-22 Sequence 22, Appl
28	74.5	9.8	2399	7	US-11-052-554A-92 Sequence 92, Appl
29	74	9.8	856	6	US-10-510-947-8 Sequence 8, Appli
30	74	9.8	856	7	US-11-042-988-13 Sequence 13, Appli
31	74	9.8	856	7	US-11-135-235-1 Sequence 1, Appli
32	73	9.6	608	6	US-10-873-528-8 Sequence 8, Appli
33	72.5	9.6	477	7	US-11-089-551A-34 Sequence 34, Appl
34	72	9.5	588	7	US-11-052-554A-339 Sequence 339, App
35	71	9.4	558	7	US-11-133-360-19 Sequence 19, Appl
36	71	9.4	558	7	US-11-133-346-19 Sequence 19, Appl
37	70.5	9.3	152	7	US-11-087-099-7818 Sequence 7818, Ap
38	70	9.2	871	7	US-11-087-099-6053 Sequence 6053, Ap
39	70	9.2	1049	6	US-10-131-826A-358 Sequence 358, App
40	70	9.2	1049	6	US-10-973-115B-358 Sequence 358, App
41	69.5	9.2	675	7	US-11-072-512-3810 Sequence 3810, Ap
42	69.5	9.2	821	7	US-11-087-099-6480 Sequence 6480, Ap
43	69.5	9.2	821	7	US-11-087-099-6752 Sequence 6752, Ap
44	69.5	9.2	825	7	US-11-087-099-3774 Sequence 3774, Ap
45	69.5	9.2	2204	7	US-11-052-554A-134 Sequence 134, App

ALIGNMENTS

RESULT 1
US/11/062
; Sequence 5, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062.471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 5
; LENGTH: 1059
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
US/11/062,471A-5

Query Match	100.0%	Score 757;	DB 7;	Length 1059;
Best Local Similarity	100.0%	Pred. No. 5.7e-68;		
Matches 143;	Conservative 0;	Mismatches 0;	Indels 0;	Gaps 0;
QY	1	NIFSNRLTYGVEIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE	60	
Db	917	NIFSNRLTYGVEIIRKNGSTDISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE	976	
QY	61	KIKILRTSNNSLSGQIIIVMDSIGNNCTMKNFONNNGNIGLGFHNSNNLVASSWYNNI	120	
Db	977	KIKILRTSNNSLSGQIIIVMDSIGNNCTMKNFONNNGNIGLGFHNSNNLVASSWYNNI	1036	
QY	121	RKNTSSNGCFWSFKHGWOEN	143	
Db	1037	RKNTSSNGCFWSFKHGWOEN	1059	

RESULT 2
US/11/062

; Sequence 8, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062.471A
; CURRENT FILING DATE: 2005-02-22
; PRIOR APPLICATION NUMBER: 09/831,050
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: PCT/GB99/03699
; PRIOR FILING DATE: 1999-11-05
; PRIOR APPLICATION NUMBER: GB 9824282.9
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 8
; LENGTH: 1084
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
US/11/062.471A-8

Query Match 100.0%; Score 757; DB 7; Length 1084;
Best Local Similarity 100.0%; Pred. No. 5.8e-68;
Matches 143; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 NIFNTRLYTGVETIRKNGSDTISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60
Db 942 NIFNTRLYTGVETIRKNGSDTISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 1001

Qy 61 KIILRTSNNSLQIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 1002 KIILRTSNNSLQIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 1061

Qy 121 RKNTSSNGCFWSPFSKEHGWOEN 143
Db 1062 RKNTSSNGCFWSPFSKEHGWOEN 1084

RESULT 3
US-10-909-769-28
; Sequence 28, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 28
; LENGTH: 838
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-28

Query Match 80.2%; Score 607; DB 6; Length 838;
Best Local Similarity 83.1%; Pred. No. 4.6e-53;
Matches 118; Conservative 8; Mismatches 12; Indels 4; Gaps 2;

Qy 1 NIFNTRLYTGVETIRKNGSDTISNTDNFVRKNDLAYINVVDREYRLYADISIAKPE 60

Db 701 SVFLNYLYEGVEVIRKNGPIDISNTDNFVRKNDLAYINVVDREYRLYAD---TKSE 757
Qy 61 KIILRTSNNSLQIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 120
Db 758 K-EKIIRTSNLDLSGQIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNI 816
Qy 121 RKNTSSNGCFWSPFSKEHGWOE 142
Db 817 RRNTSSNGCFWSPFSKEHGWOE 838

RESULT 4
US-10-909-769-26
; Sequence 26, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 26
; LENGTH: 829
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-26

Query Match 53.0%; Score 401; DB 6; Length 829;
Best Local Similarity 55.4%; Pred. No. 2e-32;
Matches 77; Conservative 26; Mismatches 26; Indels 10; Gaps 4;

Qy 7 RLYTGVETIRK--NGSTDISNTDNFVRKNDLAYIN-VVDRDVEYRLYADISIAKPEKII 63
Db 697 RLYSGIKVKIQRVNNSSTN---DNLVRKNDQVYINVFVASKTHLFLPYADATTNKEKTI 752

Qy 64 KIILRTSNNSLQIIVMDSIGNCTMNFQNNNGNIGLLGFHSHNNLVASSWYNNIRKN 123
Db 753 KI---SSSGNRFRNQVYVMSVGNCTMNFQNNNGNIGLLGFKADTVVASTWYTYTHMRDH 809

Qy 124 TSSNGCFWSPFSKEHGWOE 142
Db 810 TNSNGCFWSPFSKEHGWOE 828

RESULT 5
US-10-909-769-18
; Sequence 18, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characteris
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 18
; LENGTH: 849
; TYPE: PRT
; ORGANISM: Artificial Sequence

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; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-18

Query Match      40.5%; Score 306.5; DB 6; Length 849;
Best Local Similarity 44.4%; Pred. No. 6.1e-23;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

Qy 1 NIFSNRLTYGVEVIIRKNGSDISNTDNFVRKNDLAYINVVDREVLYADISIAKPE 60
Db 700 NYLNSLYRGTFKFIKKYAS---GNKDNIVRNRDRIYINVVKKEYRLATNASQAGVE 756
Qy 61 KIKLIRTSNNSLSLQIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LV 111
Db 757 KILSALEIPDVGN-LSQVVMKSKNDQGITNKCKMQLDNNNGNDIGFIFGHQFNNAKLV 815
Qy 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGWQE 142
Db 816 ASNWYNRQIERSRSLTGCSEWEIFPVDGCGE 846

RESULT 6
US/11/062
; Sequence 3, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles
; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; PRIOR FILING DATE: 1999-11-05
; PRIOR FILING DATE: 1999-11-05
; PRIOR FILING DATE: 1999-11-05
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 3
; LENGTH: 1067
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising Mn-SOD from B. stearothermophilus, a linker,
US/11/062,471A-3

Query Match      40.5%; Score 306.5; DB 7; Length 1067;
Best Local Similarity 44.4%; Pred. No. 8e-23;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

Qy 1 NIFSNRLTYGVEVIIRKNGSDISNTDNFVRKNDLAYINVVDREVLYADISIAKPE 60
Db 918 NYLNSLYRGTFKFIKKYAS---GNKDNIVRNRDRIYINVVKKEYRLATNASQAGVE 974
Qy 61 KIKLIRTSNNSLSLQIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LV 111
Db 975 KILSALEIPDVGN-LSQVVMKSKNDQGITNKCKMQLDNNNGNDIGFIFGHQFNNAKLV 1033
Qy 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGWQE 142
Db 1034 ASNWYNRQIERSRSLTGCSEWEIFPVDGCGE 1064

RESULT 7
US/11/062
; Sequence 6, Application US/11062471A
; Publication No. US20050255093A1
; GENERAL INFORMATION:
; APPLICANT: SHONE, Clifford Charles

```

```

; APPLICANT: SUTTON, John Mark
; APPLICANT: HALLIS, Bassam
; APPLICANT: SILMAN, Nigel
; TITLE OF INVENTION: Delivery of Superoxide Dismutase to Neuronal Cells
; FILE REFERENCE: 1581.0800001
; CURRENT APPLICATION NUMBER: US/11/062,471A
; PRIOR FILING DATE: 2005-02-22
; PRIOR FILING DATE: 1999-11-05
; PRIOR FILING DATE: 1999-11-05
; PRIOR FILING DATE: 1999-11-05
; PRIOR FILING DATE: 1998-11-05
; NUMBER OF SEQ ID NOS: 11
; SOFTWARE: PatentIn Ver. 2.1
; SEQ ID NO 6
; LENGTH: 1092
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Construct comprising a mitochondrial leader sequence from Human M
US/11/062,471A-6

Query Match      40.5%; Score 306.5; DB 7; Length 1092;
Best Local Similarity 44.4%; Pred. No. 8.2e-23;
Matches 67; Conservative 21; Mismatches 50; Indels 13; Gaps 4;

Qy 1 NIFSNRLTYGVEVIIRKNGSDISNTDNFVRKNDLAYINVVDREVLYADISIAKPE 60
Db 943 NYLNSLYRGTFKFIKKYAS---GNKDNIVRNRDRIYINVVKKEYRLATNASQAGVE 999
Qy 61 KIKLIRTSNNSLSLQIIVMDS-----IGNNCTMNFQNNNGNIGLLGFHSNN---LV 111
Db 1000 KILSALEIPDVGN-LSQVVMKSKNDQGITNKCKMQLDNNNGNDIGFIFGHQFNNAKLV 1058
Qy 112 ASSWYNNIRKNTSSNGCFWFSFISKEHGWQE 142
Db 1059 ASNWYNRQIERSRSLTGCSEWEIFPVDGCGE 1089

RESULT 8
US-10-909-769-20
; Sequence 20, Application US/10909769
; Publication No. US20060024331A1
; GENERAL INFORMATION:
; APPLICANT: Fernandez-Salas, Ester
; APPLICANT: Steward, Lance E.
; APPLICANT: Lin, Wei-Jen
; APPLICANT: Aoki, Kei Roger
; APPLICANT: Sachs, George
; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist
; FILE REFERENCE: ALLE0010-100 (ROI2003-146)
; CURRENT APPLICATION NUMBER: US/10/909,769
; CURRENT FILING DATE: 2004-08-02
; NUMBER OF SEQ ID NOS: 34
; SOFTWARE: PatentIn version 3.3
; SEQ ID NO 20
; LENGTH: 900
; TYPE: PRT
; ORGANISM: Artificial Sequence
; FEATURE:
; OTHER INFORMATION: Amino acid sequence of HC
US-10-909-769-20

Query Match      21.1%; Score 160; DB 6; Length 900;
Best Local Similarity 29.2%; Pred. No. 3.1e-08;
Matches 47; Conservative 28; Mismatches 66; Indels 20; Gaps 6;

Qy 1 NIFSNRLTYGVEVIIRKNGSDISNTDNFVRKNDLAYINVVDREVLYADISIAKPE 60
Db 741 NYINRYNLYIGKFIIRRESQSIN-DDIVRKEDYIHLDLVLHHEHWRVYAYKFKQE 799
Qy 61 KIKLIRTSNNSLSLQIIVMDS-----DSIGNNCTMNFQNN--NGNIGLLGFH----- 106

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APPLICANT: Shone, Clifford Charles
 APPLICANT: Quinn, Conrad Padraig
 APPLICANT: Foster, Keith Alan
 APPLICANT: Chaddock, John
 APPLICANT: Marks, Philip
 APPLICANT: Sutton, J. Mark
 APPLICANT: Stancombe, Patrick
 APPLICANT: Wayne, Jonathan
 TITLE OF INVENTION: Recombinant Toxin Fragments
 FILE REFERENCE: 1581.0130004
 CURRENT APPLICATION NUMBER: US/11/077,550
 CURRENT FILING DATE: 2005-03-11
 PRIOR APPLICATION NUMBER: 10/241,596
 PRIOR FILING DATE: 2002-09-12
 PRIOR APPLICATION NUMBER: 09/255,829
 PRIOR FILING DATE: 1999-02-23
 PRIOR APPLICATION NUMBER: PCT/GB97/02273
 PRIOR FILING DATE: 1997-08-22
 PRIOR APPLICATION NUMBER: 08/782,893
 PRIOR FILING DATE: 1996-12-27
 PRIOR APPLICATION NUMBER: GB9625996.5
 PRIOR FILING DATE: 1996-12-13
 PRIOR APPLICATION NUMBER: GB9617671.4
 PRIOR FILING DATE: 1996-08-23
 NUMBER OF SEQ ID NOS: 179
 SOFTWARE: PatentIn version 3.1
 SEQ ID NO 141
 LENGTH: 1315
 TYPE: PRT
 ORGANISM: Clostridium tetani
 US-11-077-550-141

Query Match 18.1%; Score 137; DB 7; Length 1315;
 Best Local Similarity 23.4%; Pred. No. 9.9e-06;
 Matches 40; Conservative 32; Mismatches 47; Indels 52; Gaps 8;

QY 1 NIFSNTLRTGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDROVEYRLVADISIAKPE 60
 DB 1163 NIYR-RLYNGUKFIKR--YTPNNEIDSFVKSGBP-----IKLY--VSYNNE 1206
 QY 61 KIIKLIRTSNNSLGQIIIVMDISIGNNC-----RVGYNAPGIPLYKKMEAVKLRDLKTSVQLKLYDDKNA 1263
 DB 1207 HIVGPKDGNAPNNLDRIIL--RVGYNAPGIPLYKKMEAVKLRDLKTSVQLKLYDDKNA 1263
 QY 99 NTGLGFGHNN-----LVASSWYNNIRKNTSSNCCFWSFISKEHG 140
 DB 1264 SLGLVGTGNGQIGNDPNRDLITASNWFNHLKDKIL--GCDWYFVPTDEGW 1312

RESULT 13
 US-10-909-769-24
 ; Sequence 24, Application US/10909769
 ; Publication No. US20060024331A1
 ; GENERAL INFORMATION:
 ; APPLICANT: Fernandez-Salas, Ester
 ; APPLICANT: Steward, Lance E.
 ; APPLICANT: Lin, Wei-Jen
 ; APPLICANT: Aoki, Kei Roger
 ; APPLICANT: Sachs, George
 ; TITLE OF INVENTION: Toxin Compounds with Enhanced Membrane Translocation Characterist
 ; FILE REFERENCE: ALLEG010-100 (R012003-146)
 ; CURRENT APPLICATION NUMBER: US/10/909,769
 ; CURRENT FILING DATE: 2004-08-02
 ; NUMBER OF SEQ ID NOS: 34
 ; SOFTWARE: PatentIn version 3.3
 ; SEQ ID NO 24
 ; LENGTH: 834
 ; TYPE: PRT
 ; ORGANISM: Artificial Sequence
 ; FEATURE:
 ; OTHER INFORMATION: Amino acid sequence of HC
 US-10-909-769-24

Query Match 13.7%; Score 103.5; DB 6; Length 834;
 Best Local Similarity 21.9%; Pred. No. 0.013;
 Matches 40; Conservative 22; Mismatches 42; Indels 79; Gaps 7;

QY 6 TRLYTGVEVIR-----KNGSTDISNTDNFVRK--NDLAYINVVDROVEYRLVADISIAK 58
 DB 685 SKLYTGMPITIKSVSDKNPYSRILNGDNIILHMLYNSRKMTIIRDTDT---IYA----- 735
 QY 59 PEKIIKLIRTSNNSLGQIIIVMDISIGNNCTMNF-----QNNRNGNITGLGFGHNSNNLVAS 113
 DB 736 -----TQSGECSQNCVVALKQSLNGLNYGIGIFSISIKNIVSK 771
 QY 114 SWY-----YNNIRKNTS-----SNGCFWSPISKEHG 139
 DB 772 NKYCSQIFSSFRENTMLLADIYKWPSPFNAYTPVAVTNYETKLLSTSSFWKFIISDRDPG 831
 QY 140 WQE 142
 DB 832 WVE 834

RESULT 14
 US-11-087-099-10263
 ; Sequence 10263, Application US/11087099
 ; Publication No. US20060041961A1
 ; GENERAL INFORMATION:
 ; APPLICANT: Abad, Mark S. et al.
 ; TITLE OF INVENTION: Genes and Uses for Plant Improvement
 ; FILE REFERENCE: 38-21(53450)B EP
 ; CURRENT APPLICATION NUMBER: US/11/087,099
 ; CURRENT FILING DATE: 2005-03-22
 ; NUMBER OF SEQ ID NOS: 12464
 ; SEQ ID NO 10263
 ; LENGTH: 874
 ; TYPE: PRT
 ; ORGANISM: Clostridium acetobutylicum
 US-11-087-099-10263

Query Match 11.7%; Score 88.5; DB 7; Length 874;
 Best Local Similarity 28.5%; Pred. No. 0.44;
 Matches 35; Conservative 22; Mismatches 49; Indels 17; Gaps 6;

QY 1 NIFSNTLRTGVEVIRKNGSTDISNTDNFVRKNDLAYINVVDROVEYRLVADISIAKPE 60
 DB 700 NISSLAKITKLKSLMDHTGDISLSGLTNLN---YLGVDNNIE-----DITSLK-- 749
 QY 61 KIIKLIRTSNNSLGQIIIVMDISIGN--NCTMNFQNNNG--GNIGLLGFGHNSNNLVASSWY 117
 DB 750 ---NLTNLANLKISQNKISNVDAGNLTNLTLLDMNNNQISNINAIK--NSTKLISLSMH 805
 QY 118 NNI 120
 DB 806 NKV 808

RESULT 15
 US-11-052-554A-171
 ; Sequence 171, Application US/11052554A
 ; Publication No. US2005028866A1
 ; GENERAL INFORMATION:
 ; APPLICANT: Sachdeva, et al.
 ; TITLE OF INVENTION: COMPUTATIONAL METHOD FOR IDENTIFYING ADHESIN AND ADHESIN-LIKE
 ; TITLE OF INVENTION: PROTEINS OF THERAPEUTIC POTENTIAL
 ; FILE REFERENCE: 30853/40359A
 ; CURRENT APPLICATION NUMBER: US/11/052,554A
 ; CURRENT FILING DATE: 2005-02-07
 ; PRIOR APPLICATION NUMBER: US 60/589,227
 ; PRIOR FILING DATE: 2004-07-20
 ; PRIOR APPLICATION NUMBER: IN 173/DEL/2004
 ; PRIOR FILING DATE: 2004-02-06
 ; NUMBER OF SEQ ID NOS: 763
 ; SOFTWARE: PatentIn version 3.3
 ; SEQ ID NO 171

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; LENGTH: 2340
; TYPE: PRT
; ORGANISM: Rickettsia prowazekii
US-11-052-554A-171

Query Match      11.4%; Score 86; DB 7; Length 2340;
Best Local Similarity 24.5%; Pred. No. 2.5;
Matches 35; Conservative 28; Mismatches 64; Indels 16; Gaps 6;

Qy 1 NIFSNRLTYGVGVIIIRKNGSTDISNTDNF---VRKNDLAYINVVDREVEY-RLYADISI 56
Db 968 NAFTNLKASDDTIGTVKIINIGIQIGTPQNFQFTIQVNNKNTLVSSVNSINFGDANSQIL 1027

Qy 57 AKP-EKIKLIRTSNNSLSQIIVMDSIGNNCTMNFQNNNGGNIIGLGFHSNNL----- 110
Db 1028 SAPVDQTIKFI--NNLNETGGIITLDSNGNLTIS--GNNGIKLGSKGNELSLNKGK 1083

Qy 111 --VASSWYNNIRKNTSSNGCFW 131
Db 1084 VTVTNDLDDIQNIHQININNGALF 1106

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Search completed: March 2, 2006, 01:18:30
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